Global Health Promotion

The integral role of health literacy in health promotion in times of polycrisis

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In these times of polycrisis, the role of health promotion is as important as ever for empowering families, communities, organizations and societies. Polycrisis, understood as the convergence of a global health pandemic, economic challenges, environmental and climate issues, political and cultural/geopolitical conflicts, amplifies the complexities individuals face in accessing, understanding, processing, appraising and applying/utilizing information and resources, especially in the area of health. The social and economic impacts of polycrisis (1) across different populations result in, and enhance existing, inequalities in health. There is no better time than now to recognize the role of health literacy in health promotion at all levels as a vehicle for empowerment. The ability to make informed decisions regarding health behaviors, preventive measures and access to healthcare services becomes paramount. In this editorial, we explore the vital role of health literacy in health promotion during polycrisis, highlighting its significance in empowering individuals, fostering community resilience and addressing the unique challenges posed by overlapping crises.

Health literacy as a determinant of health

Whether as a social determinant of health or as a mediator of the effects of social determinants of health, health literacy association with health and well-being has been increasingly acknowledged based on a wealth of research (2). Important policy statements such as the World Health Organization Shanghai Declaration on Promoting Health in the 2030 Agenda for Sustainable Development recognize health literacy as one of the three pillars of health promotion, alongside good governance and the role of cities and communities for health (3). National and international surveys for well over a decade (4) have demonstrated the social gradient with regard to health literacy particularly concerning socio-economic issues (5). Health literacy initiatives in times of polycrisis should address these disparities, ensuring that information and relevant services reach vulnerable populations and are tailored to their specific needs. Additionally, numerous studies have shown that there is a need to address mental health literacy as well as promoting the use of preventative health services among people with lower levels of health literacy (6).

Health literacy and health crises

In the context of the COVID-19 pandemic, the role and contribution of health literacy in health promotion was evident early on (7) for empowering individuals, communities and organizations. Yet, in the early stages of the crisis there was a lack of attention given to, and a dearth of resources allocated for, health promotion action within national action plans for health crisis preparedness. Health promotion action in general, and more specifically a focus on health literacy, was often not evident (8). Amidst the complexities of overlapping crises, empowerment is crucial for individuals and communities to make informed decisions about their health and seek health services needed. In times of crisis, the most vulnerable populations often suffer more than others, leading to the understanding that health literacy may play an important role as a social vaccine (9). Polycrisis often bring about heightened

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uncertainty and anxiety. In such situations, health literacy acts as a tool for empowerment, providing individuals with the skills to understand, critically evaluate and apply health information to their unique circumstances. As such, health literacy is a resource for increasing resilience and strengthening coping mechanisms.

Advocating and action for promoting health literacy

In light of all above, the role of advocacy for health literacy in health promotion is paramount. Thus, in revising the 2018 *IUHPE Position Statement on Health Literacy – Towards a Vision of a Health Literate World*, IUHPE shows its commitment to promoting health literacy on a number of levels (10) to achieve health, well-being and equity.

This Statement, developed by the IUHPE Global Working Group on Health Literacy, ratified by the IUHPE Executive Board in October 2023, was revised to respond to global developments, including crises, since first released in 2018. These include: the COVID-19 pandemic, non-communicable diseases, growing populism in infomedia and misinformation, planetary health needs, the threat to some long-standing democracies, global health policy opportunities, broad expansion of coordinated measurement initiatives and research, digital health, and AI breakthroughs and challenges (11). The statement highlights increased attention given to evidence-based intervention, expanded organizational interest in health literacy, particularly in health and educational systems including relevant stakeholders, growing international collaboration and more.

The Statement also reflects a natural paradigm shift from the focus on personal health literacy to include collective and organizational structures with a systemic approach. Thus, in the revised Statement, the updated definition of Health Literacy is used: 'Health literacy represents the personal competencies and organizational structure, resources and commitment which enable people to access, understand, appraise and use information and services in ways which promote and maintain good health' (12).

As such, the 2023 Position Statement advocates for a systems approach to health literacy action in a number of key areas: 1. health literacy and health promotion policy, acknowledging systems approaches and organizational health literacy; 2. evidence-based interventions including tailoring health communication; 3. promoting health literacy measurement and research supported by necessary resources; 4. building capacity in the workforce including training and empowering stakeholders, particularly in health-promoting settings, as well as supporting civil society to be active participants in their well-being (13).

To note, the revised *IUHPE Position Statement on Health Literacy* is designed for practical use and is aligned with the IUHPE Strategic Plan of 2021–2026 and other recent advocacy initiatives by IUHPE, namely the Position Statement on *Planetary Health Promotion and Indigenous World Views and Knowledge* (14).

Communities, primary care and relevant organizational stakeholders are coming to the forefront even more than in the past for the role they play in co-producing health and well-being (15), as is seen in the original research article in this issue of *Global Health Promotion* by Kılınç and colleagues entitled 'Public health literacy in primary users in western Turkey'. Their findings show that in Turkey 'public health literacy' needs to be given priority in order to tackle challenges that affect local and global health (16).

There are still many challenges to confront and many others are on the close horizon. While we are diligently working towards achieving digital health literacy, leaving no one behind, let us not forget the value of the rich and deeply-rooted ancestral wisdom that underpins health action and promotion in so many cultures (17). Furthermore, when we embrace the settings approach for health promotion, we can conceptualize a coordinated 'supersetting approach' where multiple settings work in synergy with each other to promote health and health literacy (18).

Conclusion and way forward

In times of polycrisis, health literacy emerges as a critical determinant of individual, community and societal well-being. The challenges posed by overlapping crises necessitate a comprehensive approach to health promotion that integrates health literacy strategies, embedded within organizations. By tailoring communication, promoting digital health literacy, engaging communities, addressing mental health concerns and tackling socio-economic disparities, societies can build a resilient and

health-literate population capable of navigating the complexities of polycrisis. As health promotion continues to evolve, acknowledging and addressing health literacy in the context of polycrisis is essential for fostering a healthier and more informed, empowered global community.

As mentioned by Iago and colleagues in their original research article in this issue of *Global Health Promotion* entitled *Health Literacy, Coping with Pandemic among Leisure Time Monitors*', health literacy is more important than ever in the face of these global health threats, which have impacted all levels of the social-ecological model, including individual health behaviors, family relationships, organizational behavior, state policy-making, mortality statistics and the international economy in the space of a few months and even weeks (19).

In terms of dealing with polycrisis, we may be headed for a state of chronic polycrisis, in which case health literacy research, action and policy will fill a need to accommodate this new norm. Health literacy is one of the fundamental building blocks for a resilient society, empowering individuals, stakeholders, organizations and societies by investing in well-being and health equity.

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Original Article

The association between health literacy, COVID-19 knowledge and adherence to preventive measures in Turkey

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Abstract: Despite vaccination and various prevention policies, the coronavirus (COVID-19) pandemic maintains its negative effects globally. Therefore, people must be adequately informed and put this knowledge into practice in order to take the necessary precautions. This can be achieved with adequate health literacy. In this context, this study was conducted to determine the relationship between health literacy, COVID-19 knowledge and adherence to preventive measures. The sample of this descriptive cross-sectional online survey consisted of 1086 people. Data were collected using a demographics questionnaire, the European Health Literacy Scale, the COVID-19 Knowledge Assessment Questionnaire and the COVID-19 Adherence Assessment Questionnaire. Participants' health literacy index had a median score of 30.9, with 67.5% having inadequate or problematic health literacy. Gender, age, education, marital status, region of residence, employment status and economic status were associated with health literacy ($p < 0.05$). Participants' median knowledge and adherence scores were 40 and 54, respectively. There were significant positive correlations between health literacy index, knowledge and adherence scores ($p < 0.001$). This study demonstrated that health literacy, COVID-19 knowledge and adherence were associated with each other. As a result, strategies aimed at improving health literacy may be beneficial in terms of having better knowledge and demonstrating high adherence to measures, thus, eradicating the COVID-19 pandemic, reducing COVID-19-related conditions and promoting public health.

Keywords: COVID-19, health literacy, knowledge, client adherence, disease prevention

Introduction

Pandemics are significant diseases in terms of public health because they affect not only infected individuals, but also the entire society (1). The COVID-19 pandemic is also one of those pandemics, resulting in many new cases and deaths, and has adversely affected public health (2). Since the first coronavirus (COVID-19) case was identified in Wuhan, China, COVID-19 has spread throughout the world and become a major pandemic (3). It resulted in 166,346,635 confirmed cases and 3,449,117 deaths worldwide as of 2021 (4). It also revealed significant inequalities in social life, economy and health (5,6).

There is no proven specific antiviral therapy that completely cures COVID-19 disease (3,7). On the other hand, as of 18 February 2021, at least seven different vaccines had been launched around the world (8). However, there are challenges in ensuring global access to COVID-19 vaccines (9). These challenges and the rapid global spread of COVID-19 have prompted people to learn more about the disease and the virus (10). Simultaneously, health authorities and policymakers have collaborated to reduce the risk of infection and virus spread around the world (7). Social awareness studies, publication of guides, curfew, online education and restrictions on religious, social, cultural and sporting activities have emerged with these

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collaborations (11). As a result of these efforts, health communication aimed at informing people about COVID-19 has become widespread, resulting in an infodemic and a lot of misinformation. Therefore, health literacy (HL) emerges as a critical concept in terms of obtaining accurate information and recognizing false information (10) as individuals' ability to access, understand and apply this information, suggestions and solutions in daily life depend on their HL (7). HL is defined as 'the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others' (12). Combating the COVID-19 pandemic is possible with a high level of HL because the COVID-19 pandemic is manageable if society recognizes the significance of the measures to be implemented and then puts them into action (10).

Surveys carried out in numerous nations indicated that people's levels of HL were inadequate. According to studies conducted in the United States and 17 European countries, 88% and 46% of people were found to have inadequate HL, respectively (13,14). Furthermore, 80% of Turks were found to have inadequate HL (15).

HL is an important aspect in increasing knowledge about diseases and behaviors for disease prevention. Several studies have found that HL is associated with knowledge and the practice of preventive behaviors against communicable diseases (16,17). According to Castro-Sánchez *et al.* (16), people with low or inadequate HL levels engage in less protective behavior against communicable diseases. Another study, conducted in Hong Kong, found a relationship between HL and older adults' hand hygiene practices in the fight against infectious diseases (17). On the other hand, very few studies demonstrated that HL is an important determinant of COVID-19 knowledge and adherence to preventive measures (18–20).

Although it is well known that HL influences information and preventive behaviors against communicable and chronic diseases, it is unclear whether it will have a similar effect in this period when information regarding COVID-19 is scarce and there is much misinformation. Therefore, this study has been conducted to investigate the relationship between HL, COVID-19 knowledge level and adherence to preventive measures against COVID-19. This study will demonstrate whether there is an association between HL, COVID-19 knowledge and adherence to COVID-19 preventive measures in Turkey, which has not previously been explored.

Research questions

1. Is there an association between health literacy and COVID-19 knowledge?
2. Is there an association between health literacy and adherence to preventive measures?
3. Is there an association between COVID-19 knowledge and adherence to preventive measures?

Methods

Sample

The population of this descriptive cross-sectional online study consists of Turkish people aged 15 years and up. Inclusion criteria were; (a) being at least 15 years old, (b) being literate and (c) agreeing to participate in the research voluntarily. Without using any sampling process and after excluding four individuals under the age of 15, the sample was made up of 1086 people who met the inclusion criteria.

Measures

a. Demographics questionnaire

It consists of seven closed-ended questions about gender, age, education, marital status, region of residence, employment status and economic status.

b. European Health Literacy Scale (HLS-EU-Q47)

This scale was developed by the European Health Literacy Survey Consortium (21) and Abacıgil *et al.* adapted it into Turkish (22). There are 47 questions in total, with three subdomains: (a) health care, (b) disease prevention and (c) health promotion. For each question, participants must select 'very difficult' (one point), 'difficult' (two points), 'easy' (three points), 'very easy' (four points) or 'don't know' for each question. The possible score can range between 47 and 188. In order to make the calculation easier, total scores were standardized between 0 and 50 using the formula; [mean – 1]*[50/3]. A score of '0–25' points indicates inadequate HL, '> 25–33' problematic HL, '> 33–42' sufficient HL and '> 42–50'

excellent HL (22). Abacigil *et al*. calculated the Cronbach's alpha value of the Turkish version as 0.95. Cronbach's alpha coefficient of the HLS-EU-Q47 was found to be 0.963 in our study.

c. COVID-19 Knowledge Assessment Questionnaire

It is a self-administered form developed by the researchers based on various scientific publications regarding COVID-19 (23–28). It includes 50 information questions about the COVID-19 agent, symptoms, transmission routes, risk groups, treatment and prevention. Participants were asked to select one of the options of 'True', 'False' or 'I Have No Information' for each question about the COVID-19 agent, transmission routes and treatment; 'Observed', 'Not Observed' or 'I Have No Information' for each question about symptoms; 'In Risk Group', 'Not in Risk Group' or 'I Have No Information' for each question about risk groups and 'Effective', 'Ineffective' or 'I Have No Information' for the questions about prevention (Supplementary material Appendix 1 online). Correct responses were worth one point, while incorrect answers or marking 'I Have No Information' were worth zero points. The possible score can range between zero and 50. Higher scores on the scale indicate a higher level of knowledge. Cronbach's alpha coefficient of the questionnaire was found to be 0.841 in our study.

d. COVID-19 Adherence Assessment Questionnaire

It is a self-administered form that was developed by researchers in order to assess the participants' adherence to the COVID-19 preventive measures using the publications regarding COVID-19 (23–28). It consists of 30 preventative measures that should be implemented in order to prevent COVID-19 transmission. Participants were asked to select 'Always', 'Sometimes' or 'Never' for each item (Supplementary Appendix 2). 'Always' was worth two points, 'Sometimes' was worth one point and 'Never' was worth zero points. The possible score can range between zero and 60. Cronbach's alpha coefficient of the questionnaire was found as 0.918 in our study.

Preliminary test of the measures

A preliminary test with 10 people was conducted to determine the comprehensibility of the data collection tools. The data collection phase of the research began after ensuring that there were no unclear questions in the questionnaires.

Data collection

Data of the study were collected between 07/June/2020 and 11/June/2020. At the start of the data collection, the daily number of cases and deaths in Turkey were 914 and 23, respectively (29). It was a normalization period in which the government relaxed restrictions on curfew, travel, workplace activities, lodging services and social life. Despite this, the researchers decided to collect the data online. Therefore, the survey link was distributed via WhatsApp, email and social media to those who agreed to participate in the study.

Statistical analysis

Data were analyzed in 'IBM SPSS Statistics 22.0' using descriptive statistics (number, frequency, percentage, mean, median), Mann–Whitney *U*, Kruskal–Wallis, and Spearman's correlation tests. Descriptive statistics were performed to present the demographics data. Non-parametric tests were utilized in the analysis as the data were not normally distributed. In this context, Mann–Whitney *U* and Kruskal–Wallis tests were utilized to see whether there was a significant difference in the HL index between the groups. The Spearman's correlation test was used to examine the relationships between COVID-19 knowledge, adherence and HL index. Statistical significance level was set at $p < 0.05$.

Ethical considerations

This study was approved and given ethics committee approval by the Social and Human Sciences Ethics Committee of Ankara Yıldırım Beyazıt University (date: 6 June 2020, number: 84892257-604.01.02-E.16735), as well as official written permission from the Turkish Ministry of Health (application form: ERDAL CEYLAN-2020-11-01T23_16_38.xml). All data were gathered in accordance with the Declaration

Table 1. Demographic data (*N*=1086).

Variable	*Group*	*n*	%
Gender	Male	365	33.6
	Female	721	66.4
Age	15–29	680	62.6
	30–49	337	31.0
	> 50	69	6.4
Education	Literate	11	1.0
	Primary/secondary school	62	5.7
	High school	125	11.5
	Associate degree	76	7.0
	Bachelor	669	61.6
	Master/doctorate	143	13.2
Marital status	Never married	701	64.5
	Married	350	32.2
	Divorced	24	2.2
	Widowed	11	1.0
Region of residence	Urban area	690	63.5
	Town	341	31.4
	Rural area	55	5.1
Employment status	Employed	546	50.3
	Unemployed	540	49.7
Economic status	Income is less than expenses	235	21.6
	Income is equal to expenses	611	56.3
	Income is more than expenses	240	22.1

n: number; %: percentage

of Helsinki. An informational text was placed on the first page to inform the participants about the research and to obtain informed consent for the participation in the study. In order to utilize the Turkish version of the HLS-EU-Q47 within this research, written permission was obtained from the author who conducted the validity research.

Results

A total of 1086 individuals who met the inclusion criteria and were included in the study. Table 1 shows the demographic data of the participants. Accordingly, 66.4% of the participants are female, 62.6% are between the ages of 17 and 29 years, 61.6% have a bachelor's degree, 64.5% have never been married and 63.5% reside in an urban area. According to the analysis of the economic variables, 50.3% of the participants work, and 56.3% reported their income level as 'Income is equal to expenses'.

It was determined that 21.6% have inadequate HL and 45.9% have problematic HL while 20.3% and 12.2% have sufficient HL and excellent HL, respectively. The median score of the participants' HL index was 30.9. This result indicates that participants in the study have a problematic HL level. Table 2 shows the distribution of HL scores among groups for each demographic variable, as well as the significance of results of the difference between groups. Accordingly, HL index was found to be associated with gender, age, education, marital status, region of residence and economic status.

Knowledge and adherence scores were also analyzed. Accordingly, the median scores of knowledge and adherence were found to be 40 and 54, respectively. In addition, significant positive correlations were found between the HL index and knowledge score ($r=0.188$, $p<0.001$), as well as between HL index and adherence score ($r=0.182$, $p<0.001$). It was also determined that HL index

Table 2. Distribution of health literacy scores across demographic variables and the significance of group differences (*N*=1086).

Variable	*Group*	*Median*	*Min.*	*Max.*	*Test statistics*
Gender	Male	29.7	0	50.0	$p < 0.001$[a]
	Female	30.8	2.5	50.0	
Age	15–29	31.5	0	50.0	$p < 0.001$[b]
	30–49	30.1	3.5	50.0	1 > 2
	> 50	27.6	7.8	47.9	1 > 3
Education	Literate	29.4	7.8	48.9	$p < 0.001$[b]
	Primary/secondary school	27.3	10.6	47.9	5 > 2
	High school	29.4	0.7	50.0	5 > 3
	Associate degree	30.4	7.4	47.9	6 > 2
	Bachelor	30.8	0	50.0	6 > 3
	Master/doctorate	33.3	11.0	50.0	
Marital status	Never married	31.2	0	50.0	$p < 0.001$[b]
	Married	29.4	3.5	50.0	1 > 2
	Divorced	30.6	18.1	50.0	
	Widowed	29.4	17.0	42.6	
Region of residence	Urban area	31.2	0	50.0	$p = 0.002$[b]
	Town	30.4	8.5	50.0	1 > 3
	Rural area	27.3	7.8	44.3	
Employment status	Employed	30.6	3.5	50.0	$p = 0.530$[a]
	Unemployed	30.8	0	50.0	
Economic status	Income is less than expenses	28.7	0	50.0	$p < 0.001$[b]
	Income is equal to expenses	30.8	2.5	50.0	2 > 1
	Income is more than expenses	31.5	3.5	50.0	3 > 1

[a]Mann–Whitney *U* test.
[b]Kruskal–Wallis test.
Min.: minimum; Max.: maximum; *p*: significance

was correlated with COVID-19 agent knowledge ($r=0.199$, $p<0.001$), symptoms knowledge ($r=0.123$, $p<0.001$), transmission routes knowledge ($r=0.099$, $p=0.001$), treatment knowledge ($r=0.126$, $p<0.001$) and prevention ($r=0.119$, $p<0.001$) knowledge scores, which are subdomains of the knowledge questionnaire (Table 3). The correlations between adherence and knowledge subdomains scores were also investigated. Accordingly, there were significant positive correlations between adherence and COVID-19 agent knowledge ($r=0.134$, $p<0.001$), as well as symptoms knowledge ($r=0.244$, $p<0.001$), while there was a weak negative relationship with transmission routes knowledge ($r=-0.060$, $p=0.046$). Data on the correlation of HL, HL subdomains, general knowledge and knowledge subdomains scores are presented in Table 4.

Discussion

This study was conducted to evaluate whether there was a relationship between HL, COVID-19 knowledge and adherence to preventive measures. To the best of our knowledge, this is the first study conducted with this aim in Turkey. It reveals significant findings in terms of emphasizing the importance of HL in improving COVID-19 knowledge, protecting individuals from COVID-19 and controlling the COVID-19 pandemic.

Since HL affects the health level of individuals and societies, it has been highlighted in various societies in recent years and is thus frequently studied. These studies revealed that HL levels were generally problematic or inadequate (13,15,30). Similar to these findings, we found that two out of every three people in our study had a problematic or

Table 3. Correlation analysis between knowledge, subdomains of knowledge, HL index and adherence scores (*N*=1086).

COVID-19 knowledge scores and HL index	*Adherence score*	
	r	*p*
General knowledge score	0.150[a]	$p < 0.001$
COVID-19 agent knowledge score	0.134[a]	$p < 0.001$
Symptoms knowledge score	0.244[a]	$p < 0.001$
Transmission routes knowledge score	–0.060[a]	$p = 0.046$
Risk groups knowledge score	0.032	$p = 0.294$
Treatment knowledge score	0.022	$p = 0.463$
Prevention knowledge score	0.057	$p = 0.059$
HL index	0.182	$p < 0.001$

[a]Correlation (Spearman's correlation) is significant at the 0.05 level (two-tailed).
HL: health literacy; *r*: correlation coefficient; *p*: significance

inadequate HL level. We also determined that some sociodemographic characteristics were associated with HL. First, males scored higher on the HL scale than females. This finding is consistent with previous studies (31,32). The greater incidence of males in the 15–49 age group relative to females, where participants' HL levels were higher than the other age groups', is likely to have contributed to this result. Similar to this finding, various studies have also revealed that HL scores were better in younger age groups (33), inadequate HL was 1.83 times higher in individuals over 65 years old than in younger age groups (30) and age had a negative correlation with HL level (34). This result could be attributed to young people's increased ability to access information via resources such as the internet, mobile phones and computers. This facilitates their access to and utilization of health-related information and enhances their level of HL. These findings suggest that efforts to improve HL in Turkish society should be stepped up with a greater emphasis on women, adults and the elderly.

We determined that people with bachelor or master/doctoral degree had better HL than those

Table 4. Correlation analysis between health literacy, health literacy subdomains, general knowledge and knowledge subdomains scores (*N*=1086).

Correlations (Spearman's rho)		*General knowledge score*	*COVID-19 agent knowledge*	*Symptoms knowledge*	*Transmission routes knowledge*	*Risk groups knowledge*	*Treatment knowledge*	*Prevention knowledge*
General HL score	***r***	0.188[a]	0.199[a]	0.123[a]	0.099[a]	0.057	0.126[a]	0.119[a]
	Sig.	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p = 0.001$	$p = 0.061$	$p < 0.001$	$p < 0.001$
Health care score	***r***	0.194	196	0.097	0.126	0.087	0.147	0.112
	Sig.	$p < 0.001$[a]	$p < 0.001$[a]	$p = 0.001$[a]	$p < 0.001$[a]	$p = 0.004$[a]	$p < 0.001$[a]	$p < 0.001$[a]
Disease prevention	***r***	0.165	0.187	0.117	0.059	0.053	0.109	0.103
	Sig.	$p < 0.001$[a]	$p < 0.001$[a]	$p < 0.001$[a]	$p = 0.050$	$p = 0.081$	$p < 0.001$[a]	$p < 0.001$[a]
Health promotion	***r***	0.167	0.181	0.128	0.072	0.036	0.103	0.115
	Sig.	$p < 0.001$[a]	$p < 0.001$[a]	$p < 0.001$[a]	$p = 0.018$[a]	$p = 0.237$	$p = 0.001$[a]	$p < 0.001$[a]

[a]Correlation is significant at the 0.05 level (two-tailed).
HL: health literacy; r: correlation coefficient; Sig.: significance; *p*: significance

with primary/secondary or high school degree. This finding was supported by studies from Vietnam, Turkey, Kazakhstan and Iran (31,33–36). Individuals' ability to access, understand and apply information about health problems is expected to increase as their level of education increases. It suggests that more understandable messages should be delivered through more common channels in order to raise the HL level of individuals with low education levels.

We have also found that unmarried people had better HL level than married people. The majority of the unmarried people in the study were young, while the majority of the married people were older. This could have influenced this finding. People living in urban areas had also better HL levels than people living in rural areas. This finding has been supported by Shaukat and Naveed (37) and Zahnd *et al*. (38). It reflects the disparity between rural and urban areas in terms of technological infrastructure, communication channels, access to information and distribution of educated individuals, as well as demonstrating that people living in rural areas are more likely to have low HL, inequality and thus more COVID-19 transmission.

Another significant finding was that people with a higher income than their expenses had the highest HL level. Decreased socioeconomic status has also been linked to lower HL in previous studies (35–39). These findings might be explained by the fact that persons with high earnings are often well-educated, have appropriate technology and have access to a varied range of information sources.

In this study, HL was found to be associated with COVID-19 general knowledge, COVID-19 agent knowledge, symptoms knowledge, transmission routes knowledge, treatment knowledge and prevention knowledge scores. Similarly, adequate HL was found to be associated with higher levels of hypertension, chronic obstructive pulmonary disease, diabetes (40), HIV/AIDS (41) and COVID-19 knowledge level, as well as the knowledge of COVID-19 agent, symptoms, transmission routes, treatment and prevention (18). As can be seen, HL plays an important role in increasing disease knowledge in people suffering from communicable and non-communicable diseases. Given that two-thirds of the study sample had insufficient or problematic HL, which could make it difficult to have sufficient knowledge of COVID-19 and which is believed to have a significant impact on COVID-19 protection, this finding should be taken seriously and acknowledged.

The health care HL subdomain was found to be related with general knowledge and all subdomains of knowledge in the study. Except for risk groups knowledge, the health promotion HL subdomain was related with all knowledge subdomains. Finally, there was a link between the disease prevention HL subdomain and general knowledge, agent, symptoms, treatment and prevention knowledge. Improved knowledge of COVID-19, agent, risk factors, symptoms, transmission routes, prevention and treatment can be attributed to a rise in HL toward health care, disease prevention and health promotion.

We also found a significant relationship between HL and adherence to preventive measures. This finding supports previous findings that HL influences prevention behaviors for sexually transmitted diseases (42,43), infectious diseases (17) and COVID-19 (44). Protection from communicable diseases can be achieved by avoiding disease-related risk factors and adhering to preventive measures, both of which are the outcomes of having adequate HL, which not only makes it easier for individuals to understand and interpret information about diseases, but also enables them to gain the ability to use this information and demonstrate appropriate behaviors.

Another notable finding of this study was the significant relationship between adherence to preventive measures, COVID-19 knowledge and subdomain scores of knowledge (agent, symptoms and transmission routes). This finding also corroborates the findings of Li and Liu as well as of Alrubaiee *et al*. (44,45). Similarly, it was reported that greater COVID-19 knowledge positively influenced self-adherence to COVID-19 mitigation recommendations (46). Individuals with high level of disease knowledge are thought to be more aware of the negative effects of diseases, symptoms, complex/difficult treatment processes and preventive measures. Therefore, the increase in the level of knowledge about COVID-19, symptoms and transmission routes is thought to improve the awareness of the importance of adopting appropriate behaviors for protection against disease and, as a result, adherence to preventive behaviors.

Strength and limitations

The main strength of the study is that the study survey link reached most of the cities in Turkey with different socio-demographic structures. In addition, the high research population and the high reliability coefficients of the scales are other strengths of the study. The main limitations of the study, on the other hand, are that the questionnaire link was not homogeneously distributed across all age groups, the sample size calculation required for the study has not been performed, and the validity and reliability analyses of the questionnaires developed by the researchers were not performed prior to their use.

Conclusion

HL was found to be associated with both knowledge and adherence to preventive measures. Furthermore, it was determined that as the knowledge improved, so did adherence to the preventive measures. However, HL level in this population was not at the desired level. Therefore, it is recommended to create education, interventions and policies by taking into account the factors affecting HL. Improving HL is thought to be beneficial in increasing both COVID-19 knowledge and adherence to preventive measures during the COVID-19 pandemic. This would result in a more informed and adherent society. As a result, managing the COVID-19 pandemic would be facilitated.

Declaration of conflicting interests

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Original Article

Health literacy and pandemic coping in Leisure Time Monitors

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Abstract:
Introduction: Health literacy allows us to make appropriate decisions about our self-care and to use health services appropriately, therefore, it conditions people's health.
Objectives: The aim of this study was to describe the level of health literacy of leisure time monitors and the influence of self-perception of health in times of pandemic.
Study design: We used a cross-sectional observational design with non-probabilistic purposive sampling among leisure time monitors in the Autonomous Community of Galicia (Spain).
Method: For this purpose, the HLS-EU-Q47 questionnaire measuring health literacy and a questionnaire measuring perception of COVID-19 were used.
Results: The results verify that the monitors consider that the pandemic affects their daily life, that it will be a situation that will last for a long time, and they are very worried. The low level of health literacy of the leisure time monitors is also confirmed.
Conclusions: Therefore, it seems urgent to evaluate the existing training programme and to include health education contents in this programme, given the involvement of leisure time monitors in the training of children and adolescents.

Keywords: health literacy, leisure time, COVID-19, health promotion

Introduction

The limited training of individuals influences the advancement of educational attainment, but is also related to low health literacy (1,2).

Despite the assistance that may be provided in health services in interpreting health information, studies report that individuals experience difficulty and frustration when they cannot accurately understand the content of communication from their health care providers (3). Therefore, it seems necessary to increase and improve training in health literacy not only for health personnel but also for educational personnel, given their relationship with young people

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and adolescents, especially in pandemic situations. However, there are few studies on health literacy in educators.

Theoretical framework

Having health literacy is very important to make decisions about our self-care and to use health services appropriately. Health literacy conditions people's health and the safety and quality of the health care they receive (4,5). Low health literacy is a common problem worldwide and a serious problem in health care as low levels of health literacy are related to worse health outcomes. Therefore, it seems clear that educators must have high literacy to be able to educate in health. There are different definitions and approaches to the concept of health literacy (6–9). Mancuso (10) reviews definitions of health literacy and notes that they encompass integrated skills and strategies that enable the maintenance of good health. Although some authors also point out that the concept of health literacy is merely a recycling of classic concepts used in health promotion such as 'empowerment' or 'patient involvement' (11,12). Liu *et al*. (5) note that the health literacy builder covers three broad elements: (a) knowledge of health and health systems; (b) the processing and use of information in various formats related to health and health care; and (c) the ability to maintain health through self-management and working collaboratively with health providers. In this study we followed that of Okan *et al*. (13) who state that health literacy is the ability to access, understand, evaluate and apply health information, making it crucial for navigating the coronavirus and COVID-19 information environments.

In this study, we understand that leisure time monitors are health promotion agents as they develop dissemination activities and design, implement and evaluate programmes to promote healthy lifestyle habits in different institutions and with different collectives. The functions performed by the leisure time educator in the Autonomous Community of Galicia are regulated by Decree 50/2000 (14). It states that these educators must be able to carry out socio-cultural and recreational activities, both in urban leisure time and in nature, and be trained in areas as diverse as: psychosociology, animation, environmental education and nature, health education and organization and management of resources.

In addition, a recent study concludes that there is coherence between the contents of the training offered by the leisure schools and the expectations of the monitors and the people involved in the different training processes (15). Therefore, their knowledge of health seems fundamental to develop these programmes, but also to favour vicarious learning. Moreover, it has been shown that learners themselves can become health agents both at school and in the community (16,17). However, there are no studies on the level of health literacy of leisure time instructors. If we take into account the scarce studies on the group of teachers, we can say that there is a lack of studies on the health literacy level of leisure time instructors; the health literacy level is quite low (18–20) despite the relationship between health literacy and students' health behaviours (21) and with their quality of life (22). Therefore, it seems necessary to increase and improve health literacy training not only in health personnel but also in educational personnel.

Hypothesis 1: Leisure time monitors have low health literacy.

During the pandemic the demand for health information has become more evident at a time of information overload and expectations to control health (13,23). The pandemic due to coronavirus disease 2019 (COVID-19) causes fear, as its immediate population consequences have created unprecedented challenges for education and health systems (24). Children and adolescents turn to the people with whom they spend the most time and have the most trust, making leisure educators a critical source of information. Indeed, Riiser *et al*. (25) indicate that it is television and family that are the primary sources of pandemic-related health information. But, as Paakkari and Okan (26) point out, health literacy is deficient among a population with a globally underestimated public health problem. Indeed, in Europe, almost half of adults have low levels of health literacy and lack the relevant skills to care for their health and the health of others. Therefore, health literacy is a central issue in curbing the spread of the virus and in disease prevention, as well as the preparedness of health

systems in the treatment of the disease in situations that require a rapid reaction (27,28).

Hypothesis 2: Health literacy capabilities have an impact on the opinion of the pandemic situation.

The purpose of the study, therefore, was to determine the level of health literacy among leisure educators given their involvement in the training of children and adolescents and by dimensions and capabilities of the HLS-EU-Q47 scale (29); as well as the influence of health literacy on coping during the pandemic situation.

Method

We used a cross-sectional observational design with non-probabilistic purposive sampling among leisure time monitors in the Autonomous Community of Galicia (Spain).

Participants

The respondents were 156 women (85.7%) and 26 men (14.2%), with a mean age of 28.65 years (minimum = 19; maximum = 50). In relation to their area of residence, most of them live in a semi-rural environment (populations between 10,000 and 50,000 inhabitants) (45.1%), followed by those who live in a rural environment (populations under 10,000 inhabitants) (33%) and only 22% live in an urban environment (populations over 50,000 inhabitants).

Instruments

To measure the opinion on the pandemic situation, the Brief Illness Perception Questionnaire (BIP-Q5) for COVID-19 of Pérez-Fuentes *et al*. (30) was used, which is distributed in five questions with Likert scale type answers, on aspects related to the pandemic situation. The BIP-Q5 consists of five items on perceived threat of illness, where participants rate their agreement with the statements on a Likert-type scale from 0 to 10. In this case, each item has been analysed in particular. The questions asked were the following: Question 1 (Q1). How much does coronavirus infection affect your life? Q2. How long do you think coronavirus infection will last? Q3. To what extent are you experiencing symptoms due to coronavirus infection? Q4. To what extent are you concerned about coronavirus infection? Q5. How much does coronavirus infection affect you emotionally (i.e. does it make you feel angry, scared, upset or depressed)?

Other versions of the questionnaire have robust validations with Spanish samples (31,32).

The HLS-EU-Q47 (33) was used as an instrument to measure health literacy. It is a self-perception scale consisting of 47 questions that examen four health literacy capabilities (Access, Understand, Evaluate, Apply), referred to the processing of health information. Each of them has three different dimensions (Health care and attention, Disease prevention, Health promotion), which produces a matrix with 12 sub-dimensions of health literacy. Each item asks about the degree of difficulty each participant encounters in performing a particular task on a Likert scale with four categories (1 = very difficult, 2 = difficult, 3 = easy, 4 = very easy). A higher value will imply a better health literacy.

The reliability of the scale and all its capabilities and dimensions range from 0.786 to Apply to 0.947 for the health literacy scale. Access = 0.874; Understand = 0.810; Evaluate = 0.885; and Apply = 0.786. The dimensions obtained the following confidence: Health care = 0.842; Disease prevention = 0.878 and Health promotion = 0.905.

Procedure

To ensure the representativeness of the sample, the main associations of leisure time monitors in Galicia ($N = 12$) were identified, the number of professionals associated was determined and the survey was sent to them via email using a Google Forms form. The associations are located in the main cities of the autonomous community: Santiago de Compostela, Ourense, A Coruña, Lugo and Pontevedra.

The monitors completed the instrument sent by mail to their mailing addresses during the month of October 2020. Their participation was voluntary and anonymous, and their informed consent was requested respecting all ethical procedures for data collection, following the deontological standards recognized by the Declaration of Helsinki (revision of Fortaleza, Brazil, 2013) and in accordance with the recommendations of Good Clinical Practice of

the EEC (document 111/3976/88 of July 1990) and the current Spanish legal regulations governing research.

Data analysis

First, the mean, standard deviation, minimums and maximums of the abilities, dimensions and subdimensions that make up the health literacy scale are calculated. In order to compare the results with the Spanish average, data were collected for each of the abilities and dimensions from the study by Ruiz-Cabello (34). For the questions related to COVID-19 we proceeded to calculate the frequency and percentage. To verify the parametric assumption of normality, the Kolmogorov–Smirnov test was used ($p > 0.05$), although non-parametric measures were used for ordinal data. In turn, procedures were carried out to detect missing values and outliers. Spearman's bivariate correlations were calculated to establish the relationships between the different abilities, dimensions of the health literacy scale, Lickert-type questions related to the pandemic situation and self-perceived health.

Statistical analyses were performed with the SPSS v. 23 statistical software (IBM Corp., 2012). The significance level for all analyses was $p < 0.05$.

Results

Most of the monitors have a high self-perceived health, and only 0.5% have a very high self-perceived health (low = 1.6; normal = 5.7; high = 62.1; $\bar{x} = 2.61$).

If we analyse the opinion of the monitors with respect to the pandemic, we find that with respect to Q1, which aimed to find out how much the coronavirus infection affects daily life, the majority of the monitors think that it affects them quite a lot ($n = 113$), while 46 think that it affects them a lot and only 27 think that it affects them a little.

Q2 related to the length of time the coronavirus infection will last. Most of the monitors thought it would last quite long ($n = 126$) and only 24 thought it would last a short time.

However, through Q3, which focused on how much they feel symptoms due to coronavirus infection, the vast majority of the monitors have had no symptoms.

But they are concerned about coronavirus infection (Q4) as almost 85.7% are quite or very concerned. And, through Q5 we know that the pandemic resulting from coronavirus infection affects the monitors emotionally (Table 1).

With respect to the level of health literacy, we observe that the averages are relatively low, except in the case of understanding, which is the highest ($\bar{x} = 30.84$). It is followed by accessing ($\bar{x} = 29.42$), applying ($\bar{x} = 28.26$) and the lowest is processing ($\bar{x} = 25.72$). Therefore, the health literacy level of the monitors is also low ($\bar{x} = 28.6$).

And in the case of the different dimensions, we can state that the highest mean is in the dimension attention and care of the disease ($\bar{x} = 30.43$), followed by health promotion ($\bar{x} = 27.55$) and finally disease prevention ($\bar{x} = 24.51$). The highest mean scores are in attention applying ($\bar{x} = 34.24$) and prevention understanding ($\bar{x} = 34.34$). The lowest scores are in attention processing ($\bar{x} = 22.50$) and prevention applying ($\bar{x} = 24.51$).

We have included in Table 2 the average of the Spanish population in order to evaluate the level of health literacy of the monitors with respect to the general population. We can observe that the average in all dimensions and capacities is lower.

If we compare the data from the sample of monitors with the Spanish average, we can affirm that the average in all dimensions and skills is lower.

The correlations between the level of health literacy and the factors on their scale are very high, ranging from disease prevention ($r = 0.932$) to health care ($r = 0.822$). There is no correlation between the health literacy dimensions and their opinion on whether the coronavirus affects their daily life (Q1), nor in relation to the symptoms due to the infection (Q3), nor to the concern about the coronavirus infection (Q4), except for health promotion, in which, although the relationship is low ($r = -0.175$), it is significant. This means that the lower the capacity in health promotion, the higher the concern.

When the duration of the infection (Q2) is longer, there is a lower level of health literacy, especially in the ability to understand ($r = -0.33$), care ($r = -0.182$) and in health promotion ($r = -0.175$).

With respect to the extent to which coronavirus infection (Q5) affects them emotionally, there is a significant and negative relationship with all the abilities and dimensions of health literacy. Therefore,

Table 1. Distribution of questions on COVID-19 (*N*=182).

	Statistics	*A little (1–5)*	*Quite (6–8)*	*A lot (9–10)*
Q1	Frequency	27	113	46
	Percentage	12.5	62.1	25.3
Q2	Frequency	24	126	32
	Percentage	13.1	69.3	17.6
Q3	Frequency	170	9	3
	Percentage	93.3	4.9	1.6
Q4	Frequency	26	96	60
	Percentage	14.1	52.7	33
Q5	Frequency	33	82	67
	Percentage	18	45	37

Q: question

Table 2. Distribution of HLS-EU-Q4 scale abilities and dimensions (N = 182).

	Minimum	*Maximum*	$\bar{x}$	*SD*	$\bar{x}$ *Spanish population*
Health care attention	10.42	50.00	30.43	6.075	33.08
Disease prevention	6.25	45.83	24.51	7.165	33.18
Health promotion	0.00	50.00	27.55	7.991	31.80
Attention, access	8.33	50.00	33.10	8.143	33.38
Attention, understand	16.67	50.00	31.94	6.854	33.68
Attention, process	0.00	50.00	22.50	9.341	28.89
Attention, apply	0.00	50.00	34.24	7.427	36.27
Prevention, access	0.00	50.00	26.07	9.729	32.35
Prevention, understand	0.00	50.00	34.34	9.279	35.98
Prevention, process	0.00	50.00	25.42	9.875	32.5
Prevention, apply	0.00	50.00	24.51	9.876	32.57
Promotion, access	0.00	50.00	29.16	9.766	30.10
Promotion, understand	0.00	50.00	26.14	9.090	31.78
Promotion, process	0.00	50.00	29.25	10.04	34.59
Promotion, apply	0.00	50.00	26.04	9.99	31.88
Access	8.33	50.00	29.42	7.5917	31.84
Understand	11.57	50.00	30.84	6.696	33.65
Evaluate	8.15	50.00	25.72	8.289	31.86
Apply	5.56	50.00	28.26	6.842	33.66
Health literacy	12.75	50.00	28.6	6.461	32.70

the more leisure time monitors feel angry, scared or depressed the lower their health literacy level is.

These data are consistent with the results of the correlation between self-perception of health and opinions about the pandemic. Thus, there is a negative and significant relationship between all the questions asked and self-perception of health. The lower the self-perception, the greater the concern about the pandemic, and the higher the self-perception, the higher the health literacy (r = 0.197; significance = 0.008) (Table 3).

Discussion and conclusions

Some studies point to the need to quantify the level of health literacy in the population given its

Table 3. Spearman correlation between opinion on pandemic, perception of health status and health literacy abilities and dimensions.

		HL	*APL*	*EVAL*	*UND*	*ACCE*	*ATTE*	*PREV*	*PROM*	*Percep. health*
Apply	*r*	0.879**								
	Sig.	0.000								
Evaluate	*r*	0.844**	0.716**							
	Sig.	0.000	0.000							
Understand	*r*	0.844**	0.698**	0.602**						
	Sig.	0.000	0.000	0.000						
Access	*r*	0.855**	0.652**	0.596**	0.695**					
	Sig.	0.000	0.000	0.000	0.000					
Health attention	*r*	0.822**	0.710**	0.669**	0.785**	0.710**				
	Sig.	0.000	0.000	0.000	0.000	0.000				
Disease prevention	*r*	0.932**	0.795**	0.815**	0.756**	0.819**	0.691**			
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000			
Health promotion	*r*	0.876**	0.809**	0.770**	0.684**	0.755**	0.597**	0.748**		
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Q1		−0.017	0.018	0.014	−0.026	−0.015	−0.031	0.035	−0.017	−0.149*
	Sig.	0.819	0.807	0.851	0.730	0.836	0.683	0.640	0.820	0.045
Q2	r	−0.178*	−0.122	−0.131	−0.233**	−0.145	−0.182*	−0.112	−0.175*	−0.230**
	Sig.	0.017	0.101	0.077	0.002	0.051	0.014	0.131	0.018	0.002
Q3	*r*	−0.123	−0.054	−0.067	−0.145	−0.087	−0.094	−0.093	−0.124	−0.181*
	Sig.	0.099	0.468	0.371	0.051	0.243	0.209	0.210	0.097	0.015
Q4	*r*	−0.124	−0.051	−0.099	−0.121	−0.121	−0.108	−0.059	−0.155*	−0.177*
	Sig.	0.096	0.494	0.183	0.105	0.105	0.147	0.428	0.038	0.017
Q5	*r*	−0.237**	−0.179*	−0.215**	−0.197**	−0.212**	−0.210**	−0.215**	−0.222**	−0.148*
	Sig.	0.001	0.016	0.004	0.008	0.004	0.004	0.004	0.003	0.046

HL: health literacy; APL: Apply; EVAL: Evaluate; UND: Understand; ACCE: access; ATTE: Health attention; ATTE: Health care attention; PREV: Disease prevention; PROM: Health promotion; Percep. health: health self-perception; Q: question; Sig.: significance

benefits for maintaining adequate health (35). In addition, during this pandemic, we have been presented with a great challenge to integrate the vast amount of information into decision making about our personal behaviour. This requires basic health literacy (23). Indeed, since the emergence of the 2019 coronavirus disease pandemic, the disease has become one of the biggest challenges for public health systems globally (28). In this context, health literacy is more important than ever in the face of these global health threats, which have impacted all levels of the social-ecological model, including individual health behaviours, family relationships, organizational behaviour, state policy-making, mortality statistics and the international economy in the space of a few months and even weeks (27,36).

Therefore, it becomes necessary to have, in addition to a good health system, a key individual health literacy to solve complex real-life problems. Even during the pandemic it is difficult, but possible, to spend time to improve health literacy because governments and citizens require immediate action (26).

Given the communicative interaction that takes place in the educational processes during the free time of children and adolescents, we consider that these educators must have a high level of health literacy, especially in times of pandemic where the information must be very precise and consistent with the latest scientific advances.

With respect to hypothesis 1, the level of health literacy of leisure time monitors is low and below the Spanish average, thus confirming the poor training of these professionals (37,38). However, we must be cautious with this conclusion given that the study by Ruiz-Cabello (34) was conducted before the pandemic and covers the entire population, whereas this current study analyses a very specific population.

However, Paakkari and Okan (26) note that the rapid development of coronavirus 2019 disease has required individuals to acquire and apply medical information and adapt their behaviour at a very fast pace.

The highest abilities of the study monitors are Understand (ability to comprehend medical information, risk factors and health-related information and understand its meaning), Access (ability to access information on medical or clinical issues, risk factors and catch up) and Apply (ability to make informed decisions about medical problems, risk factors and thoughtful opinion on health issues) and the lowest is Evaluate (ability to interpret and evaluate medical information on risk factors and information related to health issues).

The dimension with the highest score is Health care (ability to access, understand, evaluate and make decisions about medical information), followed by Health promotion (ability to access, understand, evaluate and make decisions about health-related information and understand its meaning) and, finally, Disease prevention (ability to access, understand, evaluate and make decisions about risk factors).

Based on these data, we can conclude that the monitors are not able to interpret and evaluate health information and, therefore, have difficulties in making decisions about risk factors that affect their health. We must keep in mind that health promotion involves environmental, economic, biological and lifestyle factors and aims to increase control over health.

With respect to hypothesis 2, the leisure time monitors believe that the pandemic will modify their daily lives, they think that it will last for a long time, they are worried about the situation that affects them emotionally, although they have not experienced symptoms.

There is no correlation between health literacy capacities and the monitors' opinion on whether the coronavirus affects their daily life, neither in relation to symptoms due to infection, nor to concern about coronavirus infection, except in health promotion. Therefore, situations arising from the pandemic have affected their health decision-making. In fact, the lower their capacity in health promotion, the greater their concern about the pandemic situation and the lower their level of health literacy, especially in the capacity to understand, care for and promote health, the longer they believe the pandemic will last.

These results are supported by the study of Okan *et al.* (13), who concluded that confusion about coronavirus information was significantly higher among those who were less health literate.

In fact, leisure time monitors feel frightened and even depressed the lower their health literacy level. In this line, Nguyen *et al.* (24) establishes a protective effect on depression during the health literacy epidemic and Nguyen *et al.* (39) point out that

health literacy prevents pandemic fear, even in medical students.

Moreover, the lower their self-perception the greater their concern about the pandemic. And the higher their self-perceived health the higher their level of health literacy.

Limitations of the study and prospective

An observational study was carried out, so it is necessary to be cautious in generalizing the results because the type of sampling does not allow us to calculate the incidence of these opinions. Furthermore, the non-randomization of the sample prevents us from establishing causality; only the association between the different variables analysed is established. It would be very important to extend this type of study to similar population samples to know the incidence of the level of health literacy among educators.

However, based on the conclusions we have reached, we suggest the implementation of training programmes on health education among monitors and social educators working in the non-formal setting with different populations and among teachers working in the formal setting. The current training programme for leisure time monitors could be evaluated and health education contents could be included in this programme given the involvement of leisure time monitors in the training of children and adolescents.

These programs should introduce essential skills and resources necessary for people to find, understand, evaluate, communicate and use information and health services appropriately. Health literacy was already considered a crucial tool for the prevention of non-communicable diseases, but in these pandemic times, the efficacy of long-term, sustainable over time and beginning early in the life course investments in education and communication has also been demonstrated (26). Sentell *et al*. (27) note that greater understanding, appreciation and application of health literacy can support policy action at multiple levels to address major public health challenges.

With respect to educational strategies, Damian and Gallo (40) propose four levels of practice: in health care organizations, in community associations and collectives, increasing cross-sector collaborations, and collaborating with individual health care providers.

These actions could be complemented by targeted public information campaigns and health literacy promotion in social networks to improve the quality of information during the pandemic by identifying misinformation and facilitating decision making based on valid and reliable information (13). On the other hand, it is also necessary for the public administrations to demand and promote the training of monitors in health literacy since, at present, in spite of the numerous educational proposals in non-formal education, practically all of them exclude this training and hardly give it any importance. Even the legislation itself in the Autonomous Community of Galicia specifies only 30 compulsory hours of training in the Area of Health Education in courses of 350 hours.

Improving the health literacy of the population and health systems is fundamental to achieve health equity (27).

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The authors have no conflicts of interest to declare.

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No ethical approval was needed. Since in accordance with current legislation on social research, the approval of an ethics committee has not been requested since this is a research study in which data are collected through an anonymous survey and participants are asked to give their informed consent for data processing.

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Food recovery and produce distribution as a system strategy for increasing access to healthy food among populations experiencing food insecurity: lessons for post-pandemic planning

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Abstract: Using data from an intercept survey of 428 adults who received free surplus produce at five distribution sites and qualitative data from 15 interviews with site personnel, we examined facilitators (e.g. community partnerships, coalition support) and challenges (e.g. limited refrigerated storage, lack of transportation infrastructure) to operating a food recovery and distribution program in Los Angeles County. Overall, this food system intervention appeared to fill an unmet need for recipients, nearly 80% of whom were food insecure and 60% visited a site several months/year or monthly. For many living in this county's underserved communities, this effort was instrumental in increasing access to healthy food before and during the COVID-19 pandemic. To sustain/expand this program's reach, local governments and food assistance programs should provide greater coordination and oversight, and invest more resources into this food recovery and distribution infrastructure.

Keywords: food recovery, food distribution, food insecurity, food system, underserved communities

Highlights

1. More than 50 million Americans were food insecure during the COVID-19 pandemic.
2. Food recovery and distribution can be used to address food insecurity.
3. Distribution of recovered food appears to fill an important need in the community.
4. Most recipients of recovered food (80%) were food insecure.
5. More than half (60%) visited sites for free produce several months per year.

Background

Methane emissions from landfilled food are exacerbating our climate crisis (1). In 2018, 34% of the waste stream to California's municipal landfills was organic waste, such as food and green waste (2). That same year, an estimated 1.1 million tons of potentially donatable food were discarded in landfills (2,3). Yet, about 250,000 households in Los Angeles County (LAC) were food insecure in 2021 (4), while in the United States (U.S.), even before the COVID-19 pandemic, nearly 50 million people were food

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insecure (5). The dramatic economic consequences of the pandemic have since worsened this condition, extending to households that had never experienced food insecurity before (6,7).

Food insecurity is strongly associated with other social determinants of health, including income, education, employment, and housing stability (8). It is well documented that efforts to eliminate food insecurity are unlikely to be successful without broad anti-poverty measures, including expanded employment opportunities and affordable housing (9). While these efforts to address longer term solutions are ongoing, measures should be taken to address the immediate issues of food availability among low-income communities. In LAC, even among recipients of federal assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), food insecurity was highly prevalent among low-income households before and during the pandemic (10).

The United States Department of Agriculture defines two categories of food insecurity: (1) *low food security*, which refers to a reduction in the quality, variety, or desirability of diet with little or no indication of reduced food intake; and (2) *very low food security*, which indicates disruptions in eating patterns and reductions in food intake (11). About one-third of those who are food insecure experience very low food security in the U.S. (12). Food insecurity is more likely to occur in households headed by African American or Hispanic individuals; and among those who are never married, divorced, or separated; those who rent their homes; and those with less education (8). Food insecurity has a significant impact on the health outcomes of those who experience it. In children, the condition is associated with anemia, poor nutrition, cognitive problems, and poorer general and oral health (13–18); and in adults it is associated with poor nutrition, diabetes, and overall poor physical and mental health (19–23).

Despite high levels of food insecurity, the U.S. registers high levels of food waste (24). Recovery of produce, specifically fruits and vegetables, offers an important but underutilized solution to increasing food access among populations experiencing food insecurity. The intervention simultaneously eliminates food waste by gleaning or rescuing excess food items from farms, large distributors, or retail grocery stores (25). Recovered produce can be repurposed and distributed by community-based organizations (CBOs) in a timely manner to those in need. Local health departments (LHDs) can help connect CBOs that may have limited experience with the food distribution system to increase access to local produce in areas with low-income households (26).

While food recovery and distribution efforts may address food waste and result in increased food access, little is known about the feasibility of scaling surplus produce distribution in a large jurisdiction comprising both urban and rural areas, and about the clients' experience with food distribution events (27,28). This study addresses this gap in knowledge and health promotion practice by using a convergent parallel mixed method design (29) to characterize the profile and experience of clients who receive produce from CBOs in LAC (survey data), and contextualized the agency experience with the food distribution process through in-depth interviews with staff of these community organizations. Although the data were collected before the pandemic (fall 2018), they do offer valuable insights into possible policy and programmatic modifications (30) that may be needed to improve the food system/infrastructure regionally and across the U.S. after the pandemic.

Methods

Setting

Pre-pandemic data collected from households with incomes lower than 300% of the federal poverty level (FPL) suggest that in LAC 1.6 million people (16%) were living in food insecure households (31). Between April and December 2020, 34% of all households in the county were food insecure (7). To improve access to healthy food for these households, the LHD in LAC established a number of innovative partnerships to increase the availability of fresh produce, scaling a sustainable food distribution model countywide which complemented nutrition education services (31). Presently, the LHD is supporting this effort through its Supplemental Nutrition Assistance Program Education program (hereafter SNAP-Ed). The program is designed to improve nutrition and physical activity opportunities among SNAP-eligible residents in LAC. To achieve the goals of food recovery and distribution, the LHD

contracted with 24 community agencies to conduct nutrition education, promote physical activity, and implement policy, systems, and environmental change interventions (PSEs) in the community – specifically in their respective Service Planning Areas, geographic boundaries that are used to guide government resource allocations in the region (32). Of the 24 contracted agencies, eight coordinated with produce recovery organizations and implemented free produce distribution events for SNAP-Ed-eligible target populations (≤185% FPL).

Intercept survey

To better understand the food recovery process and client experience with accessing fresh produce, an intercept survey was conducted at food events held by five of the eight LHD partnering agencies during fall 2018; this spanned six weeks. Adult clients of these agencies were recruited from CBO-operated sites where nutrition education and other SNAP-Ed strategies were being implemented. Three of the LHD partnering agencies were not included in the survey because they did not have any produce distribution events during the sampled period. Eligible survey respondents had to reside in LAC and be >age 18 years. As part of the survey process, staff at these events also documented sex and race/ethnicity for all persons approached, and recorded whether they agreed or refused to participate. The survey itself was designed to be self-administered via paper and was available in English and Spanish. Those who completed the survey were given a $5.00 gift card to either Wal-Mart or Target. Of the 562 site clients who were invited to take the survey, 428 completed it, for a response rate of 76.2%.

The survey instrument comprised five domains of question items: demographics (age, race/ethnicity, sex, education); food insecurity status and basic needs compromises; aspects of food procurement and management (frequency of procuring food from a food bank/pantry, proportion of food procured from a food bank/pantry, duration of travel to food bank/pantry, how long food lasts, perceived food quality and variety, and cooking skills); nutritional intake; and utilization of government assistance programs such as SNAP. To collect information on the main variable of interest – food insecurity status – the survey employed the commonly used, validated two-item Hunger Vital Sign questionnaire (33). For other question items, please see Supplemental Materials online for further details.

Qualitative sample and protocol

To better understand how the produce distribution process works in practice, 15 in-depth interviews with staff from the eight eligible LHD partnering agencies were completed; this included the five sites that distributed food during the survey period. Interviewees were in management, project coordination, health education, or clinical leadership positions, and were familiar with food insecure populations and day-to-day operations. They worked in CBOs that sought to increase access to fresh fruits and vegetables by developing or expanding food distribution in low-income communities across the county. Supplemental Table-A provides a sample of questions from the protocol. Prior to conducting each interview, the lead author and a team of 10 trained graduate students from the RAND Corporation prepared background briefs on each of the CBOs – this allowed them to tailor their questions to each agency. All of the interviews were conducted by this team via telephone; each interview lasted about one hour in length. Interviewees were not offered remuneration for their participation.

Both components of the study (survey and interview) were approved (Certified Exempt) by the Human Subjects Protection Committee at the RAND Corporation. Verbal consent was obtained from all participants of the interviews.

Data analysis

To characterize the profiles of clients who received produce at the five distribution sites, we generated a series of descriptive statistics and compared them by sex and food insecurity status. Comparisons of binary variables were assessed using *t*-tests, while categorical variables were evaluated via chi-square tests. All analyses were performed using Stata 15 (34).

During each of the interviews, a team member served as the interviewer, while another served as the notetaker. Each interview was recorded and summarized independently by these two members. After completion, both members re-listened to the recording to ensure the notes were accurate and to

extract illustrative quotes. A third team member verified the accuracy of more than half of the summaries. The summary notes were later uploaded to Dedoose, an online platform that facilitated storage, management, coding, and analysis of the qualitative data (35).

Using a two-step coding process, inductive and deductive content analyses of the interview transcripts were combined to describe the range of themes discussed and any themes grounded in the data (36). Each interview was independently coded by two team members to ensure acceptable reliability. Interpretation discrepancies were resolved by consensus. Using a sample of three interviews, coding reliability was assessed and recorded (37,38): the initial reliability was 0.74, but after reconciliation and another test with two more interviews, the reliability increased to 0.82.

Results

The majority of the survey respondents were female (78%) and the average age of the sample was 50 years (range: 18–81; Table 1). About half completed the survey in Spanish; with 69% who identified as Latino, 8% African American, 14% White, 7% Asian, 3% American Indian, and 4% other. Forty-five percent did not complete high school and 21% had only a high school diploma. Sixty-one percent of the children at home were younger than 18 years of age (~1.5 children per household).

Table 2 displays the variables by sex and food insecurity status. Overall, there were very few differences in responses between respondents who reported being food insecure and respondents who did not. Based on the two food insecurity screening questions, 79% worried that food would run out, and 75% said that in the past 12 months their food sometimes or often had not lasted, and they did not have money to buy more. Compared with those who were food secure, food insecure respondents were more likely to have to make monthly choices between food and medical care (26.8% *vs*. 5.6%) and between food and housing (38% *vs*. 7%).

The vast majority traveled up to 30 min to get to the food distribution site, and most also reported they came either every month or every several months during the year. Nearly one-third reported that this was their first visit to the site. Food lasted for one to three days for 31% of them. On a scale of 1 to 5 the food provided was rated about 3.8 for quality and variety, corresponding to 'average' to 'good.'

On average, respondents reported consuming 0.5 to 1 serving each of candy, cookies, salty snacks, and sugary beverages (junk foods) in the previous day, totaling an estimated 402 calories from these sources alone.

The majority (75%) were enrolled in some type of government assistance program: 30% in SNAP, 15% in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and 53% on Medi-Cal (Table 1). Participation in SNAP was higher among those who were food insecure (Table 2).

A number of themes and sub-themes emerged from the in-depth interviews. Table 3 summarizes many of these themes—also see Supplemental Table-B for illustrative/salient quotes.

All eight partnering agencies/CBOs implemented some type of free produce distribution. These included a school district, a university, a faith-based institution, two healthcare systems, and three non-profit organizations. Interviewees discussed 'food flow' across suppliers in the distribution chain, including food sources, transportation, storage and packaging, sorting to address food quality issues, and integration of nutrition education as an endpoint of service. They described four stages in the distribution process: (1) food production by farms (fresh fruits and vegetables) and excess food availability from food retailers (non-perishable goods); (2) food recovery by organizations that seek to rescue perishable and non-perishable food from farmers, retail outlets, and other donors; (3) food distribution from food recovery organizations that act as hubs; and (4) food supply to consumers by community-based non-profit organizations. All agencies noted there is an underlying lack of central coordination countywide across these four stages of distribution.

Interviewees reported that their program teams for SNAP-Ed were typically small, consisting of 4–5 full-time employees. Yet their responsibilities were enormous: they tended to oversee part-time staff and volunteers, cultivate relationships with potential food suppliers and partner agencies, seek funds to support their activities, and are directly involved with distribution, including transporting produce

Table 1. Characteristics of intercept survey respondents at five food distribution sites in Los Angeles County (*N*=428).

Characteristics	*Percent or mean*
Male	22%
Female	78%
Average age	50 (range 18–81)
Survey language	
English	50%
Spanish	50%
Race/ethnicity	
Latino	69%
African American	8%
White	14%
Asian	7%
American Indian	3%
Other	4%
Education	
<High school	45%
High school	21%
Some college	16%
AA or technical	6%
Bachelor's degree	9%
Some graduate or degree	4%
Number of children <18 years at home	1.5 (range 0–12)
Has at least one child	61%
Participate in SNAP (CalFresh)	30%
Participate in:	
WIC	15%
CFAP	6%
CalWorks	9%
General Relief	2%
CACFP	1%
Headstart	1%
Medi-Cal	53%
HFP-CHIP	1%
Reduced School Meal	5%
Section 8 Housing	4%
Summer food program	2%
SSI	11%
None of the above	25%

AA: Associate of Arts Degree; SNAP: Supplemental Nutrition Assistance Program in the U.S.; CFAP: California Food Assistance Program; CACFP: Child and Adult Care Food Program; HFP-CHIP: Healthy Families Program—Children's Health Insurance Program; SSI: Supplemental Security Income; WIC: Special Supplemental Nutrition Program for Women, Infants, and Children.

from suppliers, sorting produce, transporting produce to consumers, organizing events, providing nutrition education, and collecting data. Training was cited as an unmet need.

While all interviewees talked about the challenges they face in their day-to-day operations, many also viewed them as opportunities to improve their implementation efforts, including reimagining their approach to resource allocation and finding better ways to collaborate with other organizations.

Perceived barriers to food recovery and distribution generally occurred at multiple levels: client, organization, system. Client-specific factors, for instance, limited attendance and retention of produce distribution events. These factors included lack of time and transportation, competing family responsibilities such as childcare, cultural/linguistic issues, limited awareness of program existence, and fear of immigration raids. Organizational barriers were primarily around logistics: inadequate or non-existent transportation vehicles, inadequate loading docks, and inadequate/non-existent cold storage space. Insufficient funding and staffing were also mentioned. At the system level, interviewees talked about administrative and bureaucratic constraints at partner sites (e.g. delays in event approvals), but also in relation to the LHD's contracting requirements, which limited the agencies to work in a single geography even though they operate in more than one of these geographies.

All interviewees discussed factors that contributed to the success of their efforts. These included staff training, a motivated workforce, planning of distribution and nutrition education events around cultural and linguistic needs, community partnerships, engagement by coalitions or communities, and institutional longevity and expertise. Of these factors, three emerged as distinctly strong facilitators: (1) community partnerships, especially when agencies are able to locate partners that can complement certain aspects of the supply/distribution chain, such as large-scale refrigerated storage and transportation; (2) local, regional, countywide coalitions that facilitate awareness of other stakeholders' resources and collaboration for developing and supporting more efficient allocation of resources; and (3) institutional longevity and expertise, especially agencies that have been operating for many years, with developed staff expertise, ties and trust across communities, countywide partner

Table 2. Intercept survey responses of respondents at five food distribution sites in Los Angeles County by sex and food insecurity status, fall 2018 (*N*=428).

	All (N=428)	*Male (n=90)*	*Female (n=315)*	*p value*[a]	*Food- secure (n=72)*	*Food- insecure (n=341)*	*p value*[a]
Minutes to travel to site				0.26			0.40
Less than 15 min	45%	38%	47%		54%	44%	
15–30 min	40%	46%	38%		29%	41%	
31–60 min	10%	12%	10%		13%	9%	
More than 60 min	5%	4%	5%		4%	5%	
Frequency of getting food				0.21			0.84
Every month	37%	43%	35%		42%	37%	
Several months during the year	22%	19%	22%		16%	22%	
One or two times a year	9%	9%	9%		9%	9%	
Never, this is my first time getting food	32%	28%	34%		33%	32%	
How many days food lasts				0.46			0.10
1–3 days	31%	33%	30%		23%	32%	
4–6 days	34%	38%	33%		28%	34%	
Seven days or more	14%	9%	16%		19%	15%	
This is my first time	21%	20%	21%		30%	19%	
Percentage of food from pantry				0.60			0.42
Very little (0–25%)	54%	51%	55%		51%	55%	
Some (26–50%)	28%	30%	27%		27%	28%	
A lot (51–75%)	11%	10%	11%		15%	10%	
Most (76–100%)	7%	8%	7%		7%	7%	
Average rating of quality of F and V (scale from 1 to 5)	3.8	3.7	3.8	0.42	3.9	3.8	0.45
Average rating of variety of F and V (scale from 1 to 5)	3.8	3.7	3.8	0.18	3.8	3.8	0.91
Confidence in preparing nutritious meals with food obtained (scale from 1 to 5)	3.5	3.4	3.6	0.17	3.7	3.5	0.15
Frequency of nutrition education classes here	2.9	1.3	3.6	0.005	2.3	2.8	0.49
In last 12 months frequency of having to choose between food and medical care				0.36			0.00
Every month	23%	25%	23%		5.6	26.8	
Several months during the year	18%	21%	17%		5.6	19.6	
One or two times a year	18%	18%	18%		12.7	20.2	
Never	41%	36%	42%		76.1	33.4	
Frequency of having to choose between food and housing				0.07			0.00
Every month	33%	40%	31%		7.0	38.0	
Several months during the year	15%	17%	15%		5.6	17.2	

(Continued)

Table 2. (Continued)

	All (N=428)	*Male (n=90)*	*Female (n=315)*	*p value*[a]	*Food- secure (n=72)*	*Food- insecure (n=341)*	*p value*[a]
One or two times a year	17%	14%	18%		11.3	19.3	
Never	35%	29%	36%		76.1	25.6	
Frequency of worrying that food would run out				0.27			–
Often	31%	34%	30%		–	–	
Sometimes	48%	50%	48%		–	–	
Never	21%	16%	22%		–	–	
Food did not last and did not have money to get more				0.04			–
Often	26%	32%	25%		–	–	
Sometimes	49%	51%	47%		–	–	
Never	25%	17%	28%		–	–	
Participation in CalFresh	30%	33%	28%	0.46	21%	32%	0.06
If no							
Don't know how to apply	20%	26%	17%	0.12	18%	21%	0.52
Am not eligible	40%	48%	39%	0.20	44%	40%	0.61
Don't want to be dependent on government	19%	13%	21%	0.18	18%	20%	0.67
Application too difficult	3%	5%	3%	0.37	5%	3%	0.29
Concerned what others will think	2%	3%	2%	0.47	2%	2%	0.86
Worried about citizenship	6%	6%	6%	0.82	4%	7%	0.35
Applied and waiting	4%	5%	4%	0.78	4%	4%	0.94
Other reason	14%	16%	14%	0.60	21%	13%	0.14
Past 24h consumption[b]							
Sweetened and sugary beverages consumption (number of servings)	0.8	0.8	0.8	0.75	0.8	0.8	0.59
Salty snack servings	0.7	0.6	0.7	0.52	0.8	0.7	0.19
Cookies	1.0	1.2	0.9	0.05	0.9	1	0.58
Candy	0.5	0.7	0.5	0.03	0.5	0.5	0.95
Fruit	2.1	2.1	2.1	0.79	2.3	2	0.13
Vegetables	2.1	2.3	2.1	0.28	2.1	2.1	0.74

[a]Comparisons of binary variables were assessed using the *t*-test while categorical variables were evaluated using chi-square tests.
[b]All variables in this section were censored (5 or more became 6 for sweetened and sugary beverages, and 4 or more became 5 for the rest).
F and V: fruit and vegetable.

Table 3. Summary descriptions of the main themes from the in-depth interviews with the local health department's food distribution partnering agencies.

Distribution process
Refers to the process of collecting and distributing food from food recovery or gleaning to distribution hubs, and finally to consumers. Sub-themes include food source, food storage, food quality in transit, transportation infrastructure, and food delivery with integrated nutrition education.
Workforce
Refers to the profile of individuals who work for the participating agencies, such as status (full-time, part-time, or volunteer status), expertise, prior experience with food-insecure populations, type of training received under Champions grant, and perceived training quality.
Barriers
Refers to perceived obstacles to the distribution processes. Sub-themes include perceived population-level barriers (such as literacy, fear of immigration raids), organization-level barriers (such as inadequate storage and transportation infrastructure), and system-level barriers (such as acquisition of permits, bureaucracy, lack of formal arrangements with other county agencies).
Facilitators
Refers to factors that are perceived to make the distribution and screening processes easier, including collaborations and regional coalitions, agency longevity and expertise, local knowledge, and community trust.
Impact
Refers to the perceived impact of agency efforts in low-income communities. Sub-themes include outcomes measurement and anecdotal evidence.
Sustainability
Refers to discussions of resources needed to ensure that current efforts are sustainable and scalable in the long-term.

networks, and an infrastructure for distribution and nutrition education.

The majority did not have empirical data nor the capacity to fully assess their programs' impact. However, most interviewees saw the value of collecting data and evaluating their programs, recommending that local governments should play a greater role in addressing this practice gap.

Discussion

Applying a mixed method design, this study examined food recovery and produce distribution barriers and facilitators at individual, organizational, and system levels, and the available opportunities for expanding food distribution efforts to better reach low-income households who are experiencing food insecurity. Emerging evidence supports the use of food recovery to address food insecurity (27,39). Several notable findings can be gleaned from this work.

First, the survey found that produce distribution events at CBO sites appeared to be filling an important need for food recipients, as up to 79% reported experiencing food insecurity, with most taking advantage of these services several months/year or monthly. Recipients of the food rated the quality of the produce at events as average to good, and most reported consuming an average of 2.1 servings of fruit and 2.1 servings of vegetables the previous day, almost at levels recommended by national authorities. However, there were some trade-offs—that is, most recipients also reported consuming an excessive amount of calories from candy, cookies, salty snacks and sugary beverages, suggesting that their diet quality was not optimal. More research is likely needed to further unpack these complexities with how produce distributions and other PSEs can complement nutrition education to influence individual dietary behaviors. This research can help strengthen future SNAP-Ed programming and contribute to local food systems' capacity to better address food and nutrition insecurity in the community (26).

Second, at the time of the study, there were a number of media outlets that reported plans by the federal government to pass legislation to preclude citizenship for any immigrant who obtains SNAP benefits; this likely had a chilling effect on the use of these services

(40). Not surprisingly, among distribution site clients who did not participate in SNAP, 6% reported that enrolling in the program would impact their citizenship. Overall, the Public Charge Rule did reduce enrollment in many safety-net programs (41); however, recent relaxation of immigration enforcement should help in easing this tension (42). Community based organizations can continue to advocate for and engage vulnerable communities by supporting alternative food initiatives alongside traditional charitable feeding programs (e.g. food pantries) (43,44).

Third, qualitative findings from this study were consistent with observations from prior studies (45,46). For example, lack of refrigerated storage and long transportation times have been identified as major challenges for perishable food recovery work (28). LHDs can facilitate and establish coalitions and collaborations to share resources and lessons learned that can address some of these challenges (47,48).

Finally, shortcomings related to program measurements of outcomes were generally common across the CBOs, suggesting that more formal measurement standards and external or public health assistance may be needed to address this data gap. To provide a more accurate depiction of food recovery and distribution, future work and food donation policies should incorporate a more standardized outcomes measurement plan so that program impact could be more rigorously assessed and compared across sites/regions (49).

Limitations

Although the mixed method design generated rich insights into the various issues, it has several limitations. First, the convenience sampling of the survey and the six-week data collection timeframe may have omitted vulnerable individuals who were not at the food distribution site on the day(s) that the survey was administered. Second, fears surrounding possible immigration raids likely reduced the pool of individuals available for the survey, thus reducing the data's representativeness.

Third, our interview sample was relatively small and not necessarily representative, thus limiting our ability to generalize our findings beyond LAC. Nonetheless, the interviews yielded rich examples of how the food distribution efforts in LAC performed, drawing insights from a diverse, multicultural, and multiracial population.

Conclusions

Addressing food insecurity in the U.S. is a pressing public health challenge, especially in light of the COVID-19 pandemic's negative impact on this condition. Food insecurity is strongly associated with social determinants of health, such as income, employment, and housing stability (12). At the same time, food waste is the largest component of municipal landfills (50). With some U.S. states, such as California, taking the lead in mandating food recovery and distribution (51), it is important to understand the full range of barriers and facilitators associated with these processes at the individual, organizational, and system levels. The knowledge gained implementing food recovery and distribution in LAC can help provide lessons for other local municipalities or unincorporated communities as they prepare to address the dramatic pandemic-related rise in poverty and associated food insecurity in the foreseeable future. Our study suggests that a policy action that could be broadened and is readily available to public health officials is the implementation and further expansion of SNAP-Ed interventions and other nutrition assistance programs. This network of food programs already exists and can be leveraged to coordinate, mobilize and improve the local food system so that it can better support food recovery and distribution in low-income communities. These programs' abilities to organize and provide oversight and technical support to communities in need could translate to noteworthy health and social benefits for all in LAC and across the U.S.

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Author contributions

A. I. Palimaru (conceptualization, data curation, formal analysis, methodology, project administration, writing of the original draft); J. I. Caldwell (conceptualization, formal analysis, project administration, assisted with the writing of the original draft); D. A. Cohen (assisted with conceptualization, methodology, supervision, review and editing); D. Shah (funding acquisition, overall project administration, review and editing); T. Kuo (assisted with conceptualization, funding acquisition, supervision, resources, review and editing).

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The authors have no conflicts of interest to declare.

Ethnical approval

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Supplemental material

Supplemental material for this article is available online.

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Original Article

The relationship between health-related knowledge and attitudes and health risk behaviours among Portuguese university students

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Abstract: Scientific evidence reveals a high prevalence of health risk behaviour among university students. This calls for the creation of educational programmes that promote more knowledge about health. However, knowledge alone is not enough to change behaviours; other factors should be considered, including attitudes towards health. The objective of this cross-sectional study was to analyse the relationship between knowledge, attitudes and health risk behaviours among university students. For this, a previously validated self-report questionnaire was applied to a stratified sample of 840 students, by year of study (first- and third-year students) and their scientific area. In addition to sociodemographic issues, the questionnaire contains a health-related knowledge scale, an attitudes towards health scale, and questions about health risk behaviours. Students displayed poor knowledge about health, correctly answering 17.77 (SD = 4.59) questions out of a total of 36, and moderate scores concerning attitudes towards health ($M = 2.61$, SD = 0.48, range: 1–5). Students reported always engaging in, on average, 3.88 (SD = 1.45) of the seven behaviours subject to the analysis. Mediation analyses indicated that knowledge about health and attitudes towards health were statistically significant predictors of risky behaviours. Furthermore, it was indicated that attitudes towards health have a mediating effect between health knowledge and health risk behaviours. Findings from this study indicate that public health and education policies should promote healthy behaviours among university students, taking into account not only the level of knowledge but essentially the development of positive attitudes when facing behaviours which put health at risk.

Keywords: health risk behaviour, health risk knowledge, attitudes towards health, higher education, health education

Introduction

Scientific research examining the health of university students has consistently shown that they are more likely to engage in risky behaviours such as excessive alcohol consumption, tobacco and drug use, physical inactivity, unbalanced eating habits and risky sexual behaviour (1–3). In addition, studies have indicated a correlation between multiple risk behaviours and a higher prevalence among final-year students compared with first-year students (4). Possible factors contributing to this trend include curiosity, experimentation, reduced parental control, identity development and the normalisation of these behaviours in the academic environment. The persistence of these unhealthy behaviours acquired during higher education has significant implications for long-term health and well-being, highlighting the urgent need for research in this field (5–7).

Health risk behaviours are a significant issue among university students and are commonly linked to various health problems, including chronic non-communicable diseases (8). In addition, these behaviours are associated with academic challenges

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(e.g. low academic engagement and performance), psychosocial and legal problems (e.g. decreased ability to concentrate, sexual assault, drug overdose, memory impairment, persistent cognitive deficits, increased risk of suicide, risky sexual practices, property damage, driving under the influence of alcohol, injuries, violence and traffic accidents) (9,10).

Health behaviour is influenced by various factors, including knowledge and attitudes. These factors have been identified in different research theories within the field of health education, with one notable model being the rational knowledge attitude practice (KAP) model. The KAP model assesses individuals' knowledge about health information, their attitudes towards a specific issue, and the practices they adopt. Some studies have also incorporated individuals' beliefs, particularly misconceptions that hinder appropriate behaviour (11). Thus, in the realm of health behaviour studies, KAP surveys primarily serve to gather data on individuals' understanding, beliefs and actions concerning a particular issue. These surveys aid in the planning, implementation and evaluation of programmes, as well as in identifying gaps in knowledge, cultural beliefs, or behavioural patterns that may either facilitate or hinder the success of a programme (12).

Although the relationship between knowledge, attitudes and health behaviours among university students continues to be extensively researched, most studies have focused on specific health behaviours (13–15). Research has shown that students often have low levels of health-related knowledge (15–17), suggesting that increasing knowledge about the dangers of risky behaviours could reduce the likelihood of engaging in such behaviours (18). However, while knowledge is essential to promoting healthy behaviours (19), it is not sufficient on its own. Therefore, effective interventions should not only provide information about health risks and hazards but also equip people with the necessary skills to avoid them (20). In this framework, attitudes play a crucial role in predicting health risk behaviours (21) and can facilitate the adoption of healthy behaviours. For example, positive attitudes towards contraceptive methods may increase the likelihood of condom use to prevent sexually transmitted infections (STIs) (22), while negative expectations (such as impaired cognitive abilities) may lead to reduced alcohol consumption (23). Nevertheless, knowledge is essential to developing attitudes towards different behaviours and helping individuals make decisions and choose healthy behaviours (24).

The present study

The above literature provides a basic understanding of the KAP framework. In this context, the present study aims to determine the relationship between knowledge, attitudes and health risk behaviours among university students and how these factors are interrelated. In this study, a wide range of health risk behaviours (smoking, alcohol consumption, illicit drug use and self-medication, eating habits, physical activity and sexual risk behaviours) are analysed. A mediation model analysis is used to test the hypotheses developed based on the KAP model: H1: there is a relationship between knowledge level and health risk behaviours; H2: attitudes towards health affect the prevalence of risk behaviours; H3: health knowledge impacts attitudes towards health; and H4: attitudes towards health have a mediating effect between health knowledge and risk behaviours. These hypotheses were also tested separately for each of the behaviours.

Materials and methods

Research method

A cross-sectional study was conducted with a proportionally representative sample of Portuguese university students at a public university during the 2018–2019 academic year.

Participants and sample

The population studied included first- and third-year bachelor's and master's degree students ($N = 5447$). A stratified sample was then formed by the year of study (first and third) and field of study (human and social sciences, law and economic sciences, exact and natural sciences, and engineering sciences) to ensure proportional representativeness of the target population. Thus, classes related to health, master's or postgraduate courses, courses that did not have classes in the first and third years, and evening classes were excluded. The minimum sample size needed for this study was 592 students (margin of

error = 5%, confidence level = 99% and response distribution = 50%). A total of 873 university students were invited to participate, and 33 questionnaires were excluded because they had not been answered or filled out incorrectly. The response rate was 96.2%.

The total number of participants was 840 university students, mainly female (n = 465, 55.4%) and those attending university full-time (n = 739, 88.8%). On average, students were 20.78 (SD = 4.221) years old. Consistent with the make-up of the student body, most respondents attended the first year of study (n = 464, 55.2%), and a large proportion was in the scientific engineering field (n = 302, 36.0%).

Instruments

Following the objectives of the study, the scales of this study were developed in three stages: construction of the scale (Stage 1), content validity (Stage 2) and psychometric validity (Stage 3), as set out by the World Health Organization's (WHO's) guide to developing KAP surveys (25). The scales were developed based on a literature review identifying existing instruments for measuring KAP. The items commonly used to assess knowledge and attitudes (perceptions, beliefs and intentions regarding health behaviours) were compiled and subjected to a pilot test involving five national scientific researchers and 12 undergraduate students. This final version was then administered to a separate group of 32 students.

Health risk behaviour

This scale was divided into seven categories. Smoking status was determined by the question 'Do you currently smoke?' and analysed according to the classification: non-smoker, former smoker or current smoker.

Alcohol consumption was measured using the AUDIT-3 scale (three items with a five-point scale coded from 0 to 4, range 0–12, with risky alcohol consumption identified in males from scores of 4 and females from scores of 3) (26).

The consumption of illicit drugs included three questions about the use of cannabis, cocaine and hallucinogens ('In the past 12 months, how many times have you consumed. . .?'). The consumption of illicit drugs was classified as a binary item: use of at least one of the listed psychoactive substances.

The prevalence of self-medication was measured by the question, 'In the last 12 months, how many times have you consumed any of the psychoactive substances listed: antidepressants/sedatives/relaxants/tranquilisers (without prescription); analgesics/anti-inflammatories (without prescription); vitamins/nutritional supplements (without prescription)?' Self-medication was classified as such if one of the psychoactive substances had been used without a prescription at least once in the previous year.

Healthy dietary habits were assessed using four food groups over the past seven days, including vegetables, fruit, sweets and fast food. Students were also asked how often they had skipped breakfast, lunch and/or dinner in the past seven days. For the analyses, unhealthy eating habits were considered one of the following behaviours in the last seven days: skipping breakfast, skipping lunch and/or dinner, insufficient fruit consumption (two or fewer times per day), insufficient consumption of vegetables (two or fewer times per day), higher consumption of sweets (four or more times per week) and higher fast food consumption (four or more times per week), according to the WHO's guidelines for a healthy diet (27).

The Godin leisure-time exercise questionnaire (28) was used to measure the prevalence of physical activity. Total activity scores were calculated by adding the metabolic equivalent calculations for each physical activity intensity level (multiplying episodes of vigorous activity by 9, moderate activity by 6 and mild activity by 3), and fewer than 14 units were classified as sedentary.

Sexual risk behaviours were measured with five questions, where risky sexual behaviours were considered to be at least one of the following: first sexual intercourse at the age of 16 or younger, two or more sexual partners in the past 12 months, failing to use a condom in all sexual relations in the past 12 months and sexual relations after alcohol or drug use in the past 12 months.

The health risk behaviour variable was calculated by summing the answers to each category, ranging from 0 to 7, with the highest value corresponding to the higher number of health-related risk behaviours. In addition, each behaviour was analysed by the dichotomous variable of the presence or absence of this risky behaviour, and it was defined as a positive behaviour if students reported up to two risk behaviours and a negative behaviour if they reported three or more.

Health-related knowledge

This scale comprised 36 items: six each on tobacco, alcohol, nutrition, sexuality and physical activity and three each on illicit drugs and medication. The following options were available for answering the questions on the scale: 'true', 'false' and 'I don't know'. One point was given for each correct answer, while an incorrect answer or the 'I don't know' response earned 0 points. The sum of all items was calculated, and the scores ranged from 0 to 36; thus, higher scores corresponded to a higher level of knowledge. Poor knowledge was determined when the overall marks were less than 50% of the total score, while a score >50% was considered good knowledge. This scale showed good internal consistency (Cronbach's alpha (α) = 0.828).

Attitudes towards health

This scale consisted of 30 items on a five-point Likert scale (1: 'strongly disagree', 5: 'strongly agree'), which included attitudes towards the health-related behaviours listed in the health risk behaviour scale. The scale had five items for each studied behaviour: 'smoking helps to relax and reduce stress'; 'a party is more fun when alcoholic beverages are consumed'; and 'young people try drugs due to emotional problems'. The results of this scale showed the following dynamics: the higher the average of the scale, the more negative the university students' attitudes towards health were, ranging from 1 to 5. Positive attitudes were found when the total marks were less than 50% of the total score, while >50% was considered a negative attitude. The Cronbach's α was 0.769.

Procedure and statistical analysis

After explaining the study's objectives and receiving informed consent, the researcher gathered the data in a classroom. The paper-and-pencil questionnaire took about 20 minutes to complete.

Data were analysed using IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, New York, USA) and PROCESS (version 3.5, 2018).

The descriptive analyses are presented in absolute (*n*) and relative (%) frequencies, means (*M*) and standard deviations (SD). The Pearson test was used to evaluate the correlation between the study variables at a significance level of ⩽0.05. Cronbach's α was used to assess reliability, while the Shapiro–Wilk test was used to evaluate the normal distribution. A Hayes bootstrapping mediation model (29) with 5000 samples was used to analyse the mediating role of attitudes concerning health, using the designation 'Model 4' and a 95% confidence interval (CI).

This analysis calculated the following five paths: the *a* path links the predictor variable for health-related knowledge to the predictor variable for attitude to health (H3); the *b* path links the mediating variable for attitude to health to the outcome for health risk behaviours (H2); the *c* path refers to the overall effect (of the predictor variable for health-related knowledge for the health risk behaviours outcome, without adjustment for the mediating variable for risk) (H1); the direct effect for the *c* path (of the predictor variable for health-related knowledge for the health risk behaviours outcome variable in the presence of the mediating variable attitudes towards health) (H4); and the indirect effect (calculated as the product of measuring the a^*b paths) (29).

Results

Descriptive analyses

According to the findings, 20.1% of the students surveyed were smokers; 22.2% used illicit drugs; and more than half (60.1%) were at risk of alcohol consumption, while 54.3% had used some form of self-medication in the past year. In addition, more than a third of the students surveyed were inactive (35.7%), 94.2% had an unbalanced diet and 74.9% had engaged in risky sexual behaviour in the previous 12 months. On average, students reported being involved in 3.88 (SD = 1.45) out of the seven behaviours and 82.1% ($n = 377$) engaged in negative behaviours. No significant differences were found in relation to student gender, $t(457) = 1.013$, $p > 0.05$.

As noted in Supplemental material file 1 online, the students' health knowledge was found to be poor, with a mean score of 17.71 (SD = 4.59) out of 36 questions. More than half of the students had poor knowledge ($n = 450$, 53.6%). The topic of risky sexual practices showed the highest level of knowledge ($M = 3.99$, SD = 1.19), while their knowledge about alcohol scored the lowest ($M = 2.10$, SD = 1.14).

Regarding attitudes towards health, students showed moderate scores ($M = 2.61$, SD = 0.48), with a significant majority (89.4%, $n = 694$) having negative attitudes. The most favourable attitude was observed in the tobacco subscale ($M = 1.85$, SD = 0.79). However, students' attitudes towards using illicit drugs and alcohol were above the mean of the subscales ($M = 3.66$, SD = 0.78; $M = 3.14$, SD = 0.84) (Supplemental file 1).

The results of the study showed that health knowledge was positively associated with risk behaviours ($r = 0.146$, $p = 0.01$) and health attitudes ($r = 0.083$, $p = 0.05$), the latter being correlated with behaviours ($r = 0.293$, $p < 0.01$). In addition, statistically significant relationships were observed between all subscales of the health knowledge scale, ranging from 0.162 ($p < 0.01$) to 0.405 ($p < 0.01$), and between all subscales of health attitudes ($r = 0.081$, $p < 0.05$ to $r = 0.435$, $p < 0.01$), except for attitudes towards illicit drugs and self-medication behaviours (Supplemental file 2).

Similarly, knowledge about alcohol, tobacco and illicit drugs was positively associated with risk behaviours ($r = 0.162$, $p < 0.01$; $r = 0.103$, $p < 0.05$; $r = 0.197$, $p < 0.01$, respectively). These results suggest that higher levels of knowledge in these categories increase the likelihood that individuals will engage in health-related behaviours.

Measurement model

This study examined the relationship between health knowledge and health risk behaviours measured by health attitudes. The results showed that health attitudes accounted for 16.7% of the total variance in risk behaviours ($R^2 = 0.1358$, $F(1,412) = 7.735$, $p < 0.001$). However, H3, which predicted that health knowledge would significantly impact health attitudes, was not empirically supported ($\beta = 0.01$, $p > 0.05$). On the other hand, H2, which suggested that health attitudes would significantly predict risk behaviour ($\beta = 0.87$, $p < 0.001$), was supported. This indicates that students with negative attitudes are more likely to engage in risky behaviours regardless of their health knowledge. Figure 1 illustrates these results.

Significant results were found for both the direct effect (c, H1; $\beta = 0.046$, $p < 0.01$) and the overall effect (c, H4; $\beta = 0.038$, $p < 0.05$). Furthermore, the indirect effect was 0.008 (95% CI: 0.001–0.017)

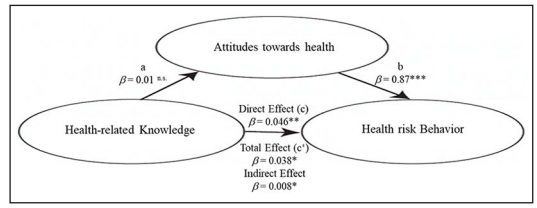

Figure 1. Final structural model.
$^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

and statistically significant ($p < 0.05$). These results suggest that students with more health knowledge are more likely to engage in health-related risk behaviours due to their attitudes towards health.

The results of the effect variables for each category analysed in the relationship between knowledge and risk behaviours are presented in Supplemental file 2.

For alcohol, higher knowledge about alcohol had a significant effect on risky consumption patterns ($\beta = 0.095$, $p < 0.001$), even after accounting for attitudes towards alcohol consumption ($\beta = 0.060$, $p < 0.001$). Similar results were found for illicit drugs and self-medication. Higher knowledge had a significant effect on the consumption of these substances ($\beta = 0.121$, $p < 0.001$; $\beta = 0.042$, $p < 0.05$, respectively) and attitudes did not cancel out this effect ($\beta = 0.120$, $p < 0.001$; $\beta = 0.048$, $p < 0.05$, respectively). However, knowledge about tobacco did not affect being an active smoker. Still, negative attitudes towards tobacco use were associated with a higher likelihood of being or becoming an active smoker ($\beta = 0.173$, $p < 0.001$). Similarly, knowledge about the benefits of physical activity did not affect a sedentary lifestyle, but positive attitudes towards physical activity positively affected actual physical activity ($\beta = 0.180$, $p < 0.001$). Among all categories, only nutrition showed an indirect effect. Higher nutrition knowledge had a negative impact on unhealthy eating habits via attitudes towards nutrition ($\beta = -0.003$, $p < 0.05$).

Discussion

This study aimed to determine the relationship between knowledge, attitudes and health risk behaviours among university students. It showed that most university students engage in behaviours that put their health at risk, have poor knowledge about health and have negative attitudes towards risky behaviours.

These outcomes demonstrate that despite national efforts to promote health in school and academic contexts, university students commonly practise and accept unhealthy behaviours, even if they have been informed about the harmfulness of certain behaviours.

Although most studies show higher use of tobacco and alcohol (30–32), unbalanced eating habits (33) and risky sexual behaviour (34) among male students, this study found no differences in risky behaviour depending on the student's gender.

The results showed moderate levels of knowledge about tobacco consumption. As previously noted (30), improving knowledge about the effects of smoking is recommended to reduce smoking rates during university. Similarly, knowledge about STIs was moderate, but the scientific literature presents inconsistent results. Some studies have found the same moderate knowledge (14) and others found low knowledge (13,35) in this dimension. Regardless, it is well known that much of this knowledge remains superficial and is informed by misconceptions and myths (13).

The students' level of knowledge about alcohol, illicit drugs, self-medication, healthy eating and physical activity was low, which is unsurprising as other studies have already shown insufficient knowledge about health (15–17). Regardless of the correlations shown in the results of this study, scientific evidence has already indicated that knowledge alone does not change health risk behaviour. This study demonstrates the importance of continuing to invest in health education programmes that provide information and improve students' knowledge. Only then are students likely to make informed, conscious and responsible decisions.

The relationship between the knowledge and behaviour variables was significant (H1), showing that higher health knowledge leads to more risky behaviours. That is, knowledge levels about alcohol are higher among students classified as high-risk consumers, and increases in knowledge about illicit drugs contribute to increases in the likelihood of using these types of drugs. The students who reported practising self-medication in the last 12 months had the highest knowledge levels. Although unexpected, Dermota *et al.* (36) have already observed that the students who engaged in risky behaviours also had higher knowledge levels. One possible explanation for these results and a novel contribution of this study is the identification of a positive relationship between risky behaviours and the propensity of students to actively seek information about the potential harm associated with those behaviours. This finding emphasizes the significance of information-seeking behaviour among individuals with risky tendencies, suggesting a complex relationship between risk-taking and the active pursuit of knowledge regarding the consequences of such behaviours.

The analysis of the relationship between the attitudes and behaviours variables (H2) revealed that unfavourable attitudes influence the adoption of risky behaviours. That is, lack of social support, time constraints, lack of motivation and erroneous beliefs are some of the factors identified in the unhealthy practices of university students, as previously demonstrated by Calamidas and Crowell (3). In this sense, it is important to highlight the significance of the 'lack of time' barrier, whether for preparing healthy meals or for physical activity, which is mentioned in the literature as one of the main obstacles and which the results of this study corroborate (33). Another example cited in recent investigations is that many university students believe that condoms reduce pleasure during sexual intercourse (35) and that trust in the sexual partner and the stability of the love relationship justify not using condoms (37) – negative attitudes explicitly stated by the students surveyed in this study. It should be added that although attitudes towards the consumption of illicit drugs have not been presented as a predictor variable for this type of use, other studies have confirmed this relationship, showing that university students tend to consume under the influence of their peers (38). Accordingly, health education programmes in higher education should promote positive attitudes among students to change their unhealthy behaviours. Students are likely to engage in healthy and conscious behaviours if they believe in the importance of their actions. This motivation can be further reinforced by the sense of achievement related to successful experiences and positive feedback on specific behaviours.

This study highlights that health knowledge does not impact health attitudes (H3). This challenges the common assumption that increasing knowledge alone will lead to positive health attitudes. By highlighting the limited impact of knowledge on attitudes, the study underscores the importance of designing effective educational interventions that

target attitudes alongside knowledge acquisition to promote healthier behaviours among students. When students recognise the value of their actions, they tend to act responsibly and in a health-promoting manner. Positive experiences and feedback related to certain behaviours can further strengthen this motivation.

The findings generally suggest that health knowledge indirectly influences unhealthy behaviours because it affects attitudes towards health (H4). Put more simply, students with higher levels of knowledge were more likely to have unfavourable attitudes towards healthy behaviours, which, in turn, correlated with a higher prevalence of risk behaviours. This is inconsistent with previous studies, where the results showed that health literacy contributes to preventive health behaviours (1) and that risk behaviours and high levels of health knowledge are not correlated (39).

This study's results, based on the theory of the KAP model, show that a higher level of knowledge positively influences unhealthy behaviours. Thus, although students engage in numerous health risk behaviours, they are informed about their adverse effects. Other factors that motivate and lead to actions must also be identified when analysing the factors associated with risky health behaviours.

In interpreting the results presented, some limitations should be considered. First, although efforts were made to construct a representative sample of students from the university under study, the findings may not be generalisable to all Portuguese university students due to the study's limited scope. Generalisations of the results should be made with caution. As demonstrated in other studies (40), although this was a cross-sectional study, conducting mediation analyses was appropriate. Second, the data collection instrument had certain limitations that could affect the validity of the data. These limitations include the possibility of social desirability bias or response bias, as some questions were personal and may have elicited embarrassment, leading to underestimation or overestimation of certain behaviours. In addition, reliance on memory can lead to difficulties in accurately recalling past behaviours, as students were asked about activities in specific time frames (e.g. the last 12 months or the last 30 days).

Furthermore, individual perceptions of the presented items may have differed. For example, there may have been bias in distinguishing between different activity levels, even though examples were given for each type. To mitigate these limitations, all students completed the questionnaires under the same conditions, namely in a classroom setting and on paper. However, this approach may have underrepresented students with certain risk behaviours, such as illicit drug use, because they were less likely to attend class. While the results of this study are informative, the level of evidence must be considered low. The methodological literature emphasises setting temporal precedence when investigating mediation. Therefore, these results must be confirmed through longitudinal studies to determine the temporal sequence and potential bidirectionality (e.g. examining information-seeking following risky behaviours).

Conclusions

The study findings suggest that knowledge about health and attitudes towards health are significant predictors of risky behaviours, with important implications for policy and programme development. To effectively target and mitigate risky behaviours among students, interventions should prioritise enhancing health knowledge and fostering positive attitudes. It is also crucial to consider the mediating role of attitudes towards health when designing interventions, recognizing their influence on behaviour. Regular and large-scale studies are essential for ongoing assessment of students' knowledge, attitudes and behaviours. This information serves as a valuable guide for improving socio-educational intervention programmes and public policies, allowing them to be more responsive and tailored to address health risk behaviours. In addition, exploring alternative procedures, potential mediating and moderating effects, and the clustering of risk behaviours can contribute to the development of targeted prevention programmes. By identifying behavioural profiles and understanding common influencing factors, policies and programmes can adopt a comprehensive approach. This enables the design of interventions that simultaneously address multiple behaviours, effectively reaching students with similar behavioural profiles, and leading to more impactful prevention initiatives.

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Declaration of conflicting interests

The author has no conflicts of interest to declare.

Ethical consideration approval code

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Supplemental material

Supplemental material for this article is available online.

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Public health literacy in primary users in western Turkey

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Abstract:
Background: Public health literacy (PHL) is a novel perspective on health literacy (HL). Differing from HL's individualist approach, PHL is concerned with public health events and promoting health in the whole society.
Objectives: To evaluate PHL, a newly developed concept, and related factors.
Methods: In this cross-sectional study, people who visited primary healthcare centers in urban and rural settings were recruited using a questionnaire that includes Public Health Literacy Knowledge Scale (PHLKS) and Adult Health Literacy Scale (AHLS). Out of four Primary Healthcare Centers (PMCs) in western Turkey selected randomly, one PMC was located in a rural setting, while three PMCs were located in an urban setting. Multiple linear regression was used to determine the predictors for PHL.
Results: The study group consisted of 1672 people, of which 55.3% were male. The mean age was 40.94 ± 15.22. The median score (min–max) from PHLKS was 13.0 (0–17). Multiple linear regression showed that income level had a negative impact on PHL. Higher education, fondness for reading, hospital admission and HL, however, increased PHL levels. Additionally, living in an urban area and not having auditory problems were positively associated with PHL.
Conclusions: Participants had a moderate level of PHL. Improving PHL should be a priority to tackle global and local problems that have an adverse effect on community health. To increase community engagement in public health events, people with low education and HL levels should be targeted in future training programs.

Keywords: public health literacy, health literacy, primary health care, health promotion

Introduction

Simonds (1) first brought about health literacy (HL) in 1974. With time, plenty of different definitions and concepts for HL have evolved and, in 1998, Nutbeam and Kickbusch defined HL as:

> 'The achievement of a level of knowledge, personal skills, and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions. Thus, health literacy means more than reading pamphlets and making appointments. By improving people's access to health information, and their capacity to use it effectively, health literacy is critical to empowerment' (2).

Two years later, Nutbeam theorized a modeling of HL with three levels: functional HL, interactive HL and critical HL. Nutbeam discussed that all three

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levels of HL will provide community/social benefit such as increased participation in public health programs, positive influence on social norms and increased community engagement on top of individual benefits. Thus, he concluded that HL is a public health goal and plays a key role in promoting health (3).

Many public health authorities also had the same idea and took action. Gazmararian *et al.* (4) argued that being public health literate is an ethical imperative and that those who are public health literate are better at assessing the impact of health events on themselves, those around them and society. Freedman and colleagues also stated that 'public health literacy' (PHL) should be separated from HL and defined it as 'The degree to which individuals and groups can obtain, process, understand, evaluate, and act upon information needed to make public health decisions that benefit the community'. It was also stated that the target of the PHL is not the individuals but the public, thus improving the community health instead of individual health. The authors also claimed that the primary object of PHL is to make more stakeholders engage in public health efforts and address the social and environmental determinants of health as opposed to the aim of HL, which is to enhance health communication between individuals and authorities as well as encouraging healthy lifestyle behaviors (5).

After the difference between PHL and HL has become evident, the need to develop measurement tools to assess the PHL levels of the public has arisen. Using the joint publication of 'Facts for Life' with the partnership of international organizations, Pleasant and Kuruvilla (6) developed the Public Health Literacy Knowledge Scale (PHLKS) and paved the way for PHL evaluation. The scale, following the footsteps of many before it, such as Test of Functional Health Literacy for Adults (TOFHLA) and Rapid Estimate of Adult Literacy in Medicine (REALM), approaches HL from a functional perspective (7,8). Yet they differ from each other as HL scales aim to measure the knowledge on health information while PHLKS's goal is to assess the knowledge regarding the events affecting public health ranging from environmental problems to the spread of infectious diseases in a community setting.

Today, humanity faces dire public health threats such as climate change, armed conflicts, emerging and re-emerging infectious diseases, and pandemics. The successful collective response from humankind against such dangers is dependent on how well versed the public is. Although Sørensen *et al.* (9) conceptualized the benefits of increased HL with health care/disease prevention/health promotion domains, broader result could be achieved with an increase in PHL. For the healthcare domain, high PHL levels could equip the public with rapid response capabilities, reducing the burden on health care systems; for the disease prevention domain, it could lead to more people involved with infectious disease control policies halting the spread, and for the health promotion domain, it could create public engagement in local and national policy-making for a healthier society (4).

As PHL is a new concept developed recently, the literature on the subject is scarce. Therefore, it is vital to assess the PHL levels of the community and the factors affecting it, in both urban and rural settings. Our study is original in that to our knowledge this is the first study that aimed to evaluate PHL in different residential settings as well as the factors related to it. Due to the lack of studies on PHL, we have used variables established to have a relationship with HL in the literature, such as sociodemographic factors, lifestyle choices and general health status (10,11).

In the study, we sought to assess the degree of knowledge on PHL, its relationship to HL, and identify the factors associated with it in a western city's urban and rural regions of Turkey, a developing country. We also wanted to determine where the public typically goes for health information.

Materials and methods

Study design and sampling

This cross-sectional study was conducted on 1672 people aged 18 or over who applied to primary healthcare centers (PHCs) between 1 July and 31 December 2019 in Eskişehir province, located in the Central Anatolia Region, neighboring the capital city Ankara. The aim of the PHCs is to provide the registered population with preventive healthcare, early detection and screenings for various diseases and outpatient diagnostic and treatment services. At least one doctor and a nurse are responsible for the

duties of a PHC. The study was carried out in four different PHCs; one from the rural district and three from the urban districts, which were drawn by lot. While the three urban PHCs included in the study were in Eskişehir, the rural PHC was located in Beylikova, 77 km from the center. The population of Eskişehir is 887,475 while Beylikova has a population of 5781. In Eskişehir city center, there are 243 PHCs and in Beylikova there are three PHCs. While the main source of income in the city center is the service sector and industrial jobs, it is agriculture in Beylikova.

The sample size was calculated with the unknown population size formula. Convenience sampling method, one of the non-probabilistic approaches, was used in the study. The sample size was 384 when the PHL level was accepted as 50%, the error margin as 5% and the confidence interval as 95% (12). For every PHC, 384 people were calculated to be reached; therefore final minimum sample size was 1536.

Permissions

The ethical approval was obtained from Eskisehir Osmangazi University's non-interventional clinical trials committee with the decision numbered 25403353-050-E.76039 and dated 25.06.2019.

Administrative permissions were acquired from Eskişehir Provincial Health Directorate and the selected PHCs.

Study procedure and data collection

A questionnaire was prepared for data collection based on the relevant literature on PHL (4–6). The first part of the questionnaire form included some sociodemographic variables such as age, sex, marital status, income status, et cetera, and factors thought to be related to PHL such as education level, their source for information on health, smoking, alcohol consumption, et cetera, and the second part of the questionnaire consisted of the PHLKS and the Adult Health Literacy Scale (AHLS).

Pleasant and Kuruvilla developed the PHLKS in 2008. It is a 17-item self-administered scale evaluating people's basic knowledge on public health, hygiene, infectious diseases, air pollution, et cetera. The items are either 'True' or 'False' and the scores obtained from the scale range from 0 to 17, where every correct answer is one point. The scale is evaluated over a total score, where a higher score implies higher PHL knowledge (6). The PHLKS was adapted to Turkish by Arikan and Tekin (13) and was found valid and reliable. In our study, the Cronbach's alpha value was 0.72.

Sezer and Kadioglu developed the Adult Health Literacy Scale (AHLS) in 2014 to evaluate the HL levels. The scale consists of 13 yes or no, 4 fill-in-the-blank, four multiple-choice, and two matching questions. The scores from the AHLS range from 0 to 23, and a high score means higher literacy (14). The scale had a good internal consistency, with a Cronbach's alpha of 0.77 in this study.

After obtaining the necessary permissions, the researchers started to collect data by reaching out to individuals who volunteered to participate in the research after receiving information about the purpose and concept of the study. The pre-prepared questionnaire form was then given to the participants who completed it under the researchers' observation. The researchers helped to fill in the questionnaire forms in place of volunteers who could not read or see well. The data collection lasted for five weeks between 29 July and 30 August. Every workday, researchers recruited participants from 8AM to 5PM. Since researchers were always present during the data collection, there were no missing data in the study. Per the personal data protection law of Turkey, no data were collected that could be used to identify the participants and only the research team has access to data, which will be deleted after 10 years.

According to their perception, the participants' income level was evaluated as low, medium, or high. Those who smoked at least one cigarette a day were considered 'smoker' and those who consumed alcohol at least once a week were considered 'alcohol drinker'. Participants who claimed they exercise five days a week and 30 min a day were accepted as 'regularly exercising'. The body mass index was calculated with the formula weight (kg)/height squared (m^2) using the self-reports of the volunteers.

Statistics

The data were evaluated using the IBM SPSS statistical package program (Version 15.0). The study used the Shapiro–Wilk normality test, descriptive analysis, Mann–Whitney *U* test, Kruskal–Wallis test, Spearman correlation analysis,

Table 1. The distribution of the participants' correct answers to the Public Health Literacy Knowledge Scale.

Items of the Public Health Literacy Knowledge Scale	*Urban sample*	*Rural sample*	*Total sample*
1. **For a healthy pregnancy and birth, all pregnant women should visit a health worker before the baby is born (T)**	**95.8**	**96.0**	**95.8**
2. Births that are not assisted by a skilled birth attendant are as safe as births that are assisted by a skilled birth attendant (F)	65.2	66.4	65.5
3. It is normal if children below the age of 1-year weigh the same over a 2-month period (F)	59.6	69.2	61.9
4. Children who are vaccinated are protected from dangerous diseases (T)	82.8	86.5	83.7
5. Overall, vaccination has more risks than benefits (F)	72.1	74.7	72.7
6. Children learn a lot by playing (T)	88.9	87.7	88.6
7. Most injuries and accidents cannot be prevented (F)	57.9	55.9	57.4
8. If a child is breathing rapidly or has difficulty breathing, the child should be taken immediately to a healthcare provider (T)	89.8	95.7	91.2
9. Many diseases can be prevented by washing hands before touching food (T)	90.3	90.5	90.3
10. Using condoms when having sex can prevent the spread of AIDS (T)	79.3	76.4	78.6
11. Using mosquito nets helps prevent malaria (T)	64.4	69.7	65.7
12. Exercise helps prevent heart disease (T)	88.2	91.7	89.1
13. Coughs and colds only get better with medicine (F)	61.4	47.6	58.1
14. It is the father's gene that decides whether the baby is a boy or a girl (T)	58.7	56.1	58.1
15. **Antibiotics kill viruses as well as bacteria (F)**	**39.1**	**22.3**	**35.1**
16. Cigarette smoking causes lung cancer (T)	89.8	95.7	91.2
17. All bacteria are harmful to humans (F)	58.2	45.4	55.1

and multiple linear regression analysis. As the scores obtained from PHLKS and AHLS did not distribute normally, logarithm base 10 was taken. Then, a three-level hierarchical multiple linear regression was performed with variables considered to be confounders and adjusted accordingly with 95% confidence intervals. The confounding factors were selected on the principle that was laid out by VanderWeele (15). For the confounding variables that were neither continuous nor dichotomous, dummy variables were employed. In the first step, sociodemographic factors, the second step, lifestyle choices, and in the last step, variables regarding medical history and scores taken from AHLS were included in the multiple regression analysis. A statistical significance value of $p \leqslant 0.05$ was accepted.

Results

The study included 1672 individuals; 924 (55.3%) were male and 748 (44.7%) were female. The study group's mean age ± SD (min–max) was 40.94 ± 15.22 (18–87) years. The scores taken from PHLKS ranged from 0 to 17, and the mean score was 12.38 ± 2.99 (median: 13.0). While the statement 'For a healthy pregnancy and birth, all pregnant women should visit a health worker before the baby is born' was the most correctly answered item with 95.8%; the statement 'Antibiotics kill viruses as well as bacteria' had the lowest correct answer rate, with only 35.1%. The distribution of the participants' answers to PHLKS is shown in Table 1.

In the study group, being younger, married and having a higher education was associated with high PHLKS levels while having a low income and being unemployed were associated with lower scores from PHLKS. The distribution of the scores obtained from PHLKS according to some sociodemographic variables is shown in Table 2.

In the study group, those who were non-obese, did not smoke, claimed they regularly exercise and did not have a chronic disease scored higher on the PHLKS. On the other hand, those who were admitted to a hospital at least four times, those who were hospitalized, and those with visual and

Table 2. The distribution of the scores obtained from the Public Health Literacy Knowledge Scale (PHLKS) according to some sociodemographic variables.

Sociodemographic variables		*n*	*(%)*	*PHLKS median score (Q1–Q3)*	*Test statistic value; p*
Age	18–39	858	51.3	14 (11–15)	**108.447; <0.001**[a]
	40–60	597	35.7	13 (10–14)	
	61 and above	217	13.0	11 (9–13)	
Sex	Female	748	44.7	13 (10–15)	1.336; 0.182[b]
	Male	924	55.3	13 (10–15)	
Marital status[c]	Married	1033	61.8	13 (10–15)	**2.603; 0.009**[b]
	Single/divorced/widowed	639	28.2	13 (10–15)	
Education level	Primary school and below	330	19.7	11 (9–12)	**306.617; <0.001**[a]
	Middle school and high school	701	42.0	12 (10–14)	
	University and above	641	38.3	14 (13–16)	
Residence area	Urban	1273	76.1	13 (10–15)	1.729; 0.084[b]
	Rural	399	23.9	12 (11–14)	
Family income level[c]	High	386	23.1	13 (11–15)	**57.871; <0.001**[a]
	Middle	1085	64.9	13 (10–15)	
	Low	201	12.0	11 (9–13)	
Employment	Unemployed	771	46.1	12 (10–14)	**4.566; <0.001**[b]
	Employed	901	53.9	13 (11–15)	
Total		1672	100.0	13 (10–15)	

[a]Kruskal–Wallis test.
[b]Mann–Whitney *U* test.
[c]Mean rank was used to determine the difference.

auditory problems had a lower PHL knowledge level. It was found that, as the general perception of self-health and the fondness for books/newspapers/magazines increases, the scores taken from PHLKS also increase. The distribution of some variables regarding PHLKS scores has been shown in Table 3.

Among the participants, the most common usual information source regarding health was health professionals, with 58.79%, followed by newspapers/television. Figure 1 shows the distribution of the usual source for health information.

The study participants scored between 0 and 23 on the AHLS; the mean score was 12.69 ± 0.10 and the median score was 13.0. Spearman correlation analysis to assess the relationship between PHLKS and AHLS showed a positive moderate correlation ($r = 0.586$, $p < 0.001$). The relationship between PHL knowledge and adult HL is shown in Figure 2.

The regression analysis showed that income level, education level, fondness for reading, area of residence, auditory problems, the number of hospital admissions and HL were still significant factors in the last model after controlling for other variables ($R^2 = 0.342$, $F = 37.003$, $p < 0.001$). The multiple linear regression analysis results of the related factors are given in Table 4.

Discussion

It is hard to achieve a health-literate public where individuals can assess their health and act accordingly. Even after it is defined as a major public health issue, HL levels have stagnated (16,17). On the other hand, a high PHL is an even more challenging feat for the public health authorities since it requires proficiency in HL and a broader understanding of the social, environmental and systemic forces (5). One of the first steps in tackling this obstacle includes measuring the PHL levels of the population, as suggested by Gazmararian *et al.*

Table 3. The distribution of scores taken from public health literacy knowledge scores according to some related variables.

Related variables		*n*	%	*PHLKS median score (Q1–Q3)*	*p*
Body mass index	Non-obese	1525	91.2	13 (10–15)	**2.712; 0.007**[a]
	Obese	147	8.8	12 (10–14)	
Smoking status[b]	Non-smoker	884	52.9	13 (10–15)	**2.651; 0.008**[a]
	Smoker	788	47.1	13 (0–14)	
Alcohol consumption	Non-consumer	1327	79.4	13 (10–15)	0.205; 0.838[a]
	Consumer	345	20.6	13 (10–15)	
Regularly exercising	Non-exerciser	1007	60.2	12 (10–14)	**6.615; <0.001**[a]
	Exerciser	665	39.8	13 (11–15)	
General health status perception	Good*	1090	65.2	13 (0–17)	**98.079; <0.001**[c]
	Moderate	490	29.3	12 (0–17)	
	Bad	92	5.5	11 (1–17)	
Chronic disease	Not present	1104	66.0	13 (11–15)	**7.069; <0.001**[a]
	Present	568	34.0	12 (10–14)	
Hospital admission in the last year[b]	One time	758	45.3	13 (10–15)	**11.494; 0.009**[c]
	Two times	386	23.1	13 (10–14)	
	Three times	231	13.8	13 (11–15)	
	Four or more times*	297	17.8	13 (11–15)	
Hospitalization in the last year	Not hospitalized	1417	84.7	13 (11–15)	**5.268; <0.001**
	Hospitalized	255	15.3	12 (10–14)	
Surgical operation history	Not operated	1049	62.7	13 (10–15)	0.040; 0.968[a]
	Operated	623	37.3	13 (11–15)	
Visual problems	Not present	1366	81.7	13 (11–15)	**6.155; <0.001**[a]
	Present	306	18.3	12 (10–14)	
Auditory problems	Not present	1566	93.7	13 (11–15)	**7.245; <0.001**[a]
	Present	106	6.3	10 (9–13)	
The fondness for books/ newspapers/magazines	Low	387	23.1	11 (9–13)	**165.634; <0.001**[c]
	Moderate	741	44.3	13 (10–14)	
	High	544	32.5	14 (12–16)	
Total		1672	100.0	13 (10–15)	

[a]Mann–Whitney *U* test.
[b]Mean rank was used to determine the difference.
[c]Kruskal–Wallis test.
PHLKS: Public Health Literacy Knowledge Scale
*Differs within the group.

(4). In our study, the participants were found to have a moderate knowledge level of PHL. Similar results have been reported in other studies (6,13).

In the study, four questions had a correct response rate of over 90%, similar to Pleasant and Kuruvilla. However, while our study group heavily associated cigarettes with lung cancer, they reported a higher correct response rate for the item 'Children learn a lot by playing' (6). The reason behind the high knowledge of smoking in our study group may stem from Turkey's successful anti-smoking campaign, which applies WHO's MPOWER package (18).

On the other hand, 'Antibiotics kill viruses as well as bacteria', the 15th item on the scale, was the only statement with a correct response rate below 50%, with only 35.1% of the study group giving the correct answer. Arikan and Tekin (13) also reported less than 50% correct response rate for the same

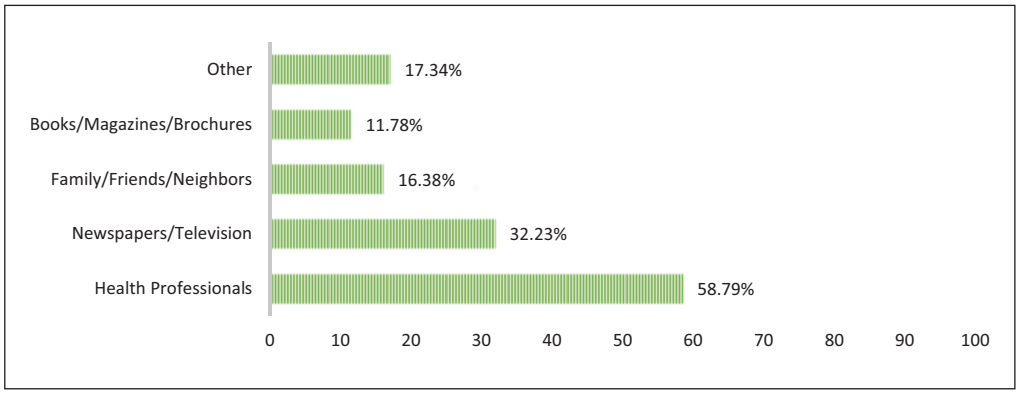

Figure 1. Distribution of the usual source for information regarding health.
*The participants were allowed to give multiple answers, and the data were evaluated accordingly.

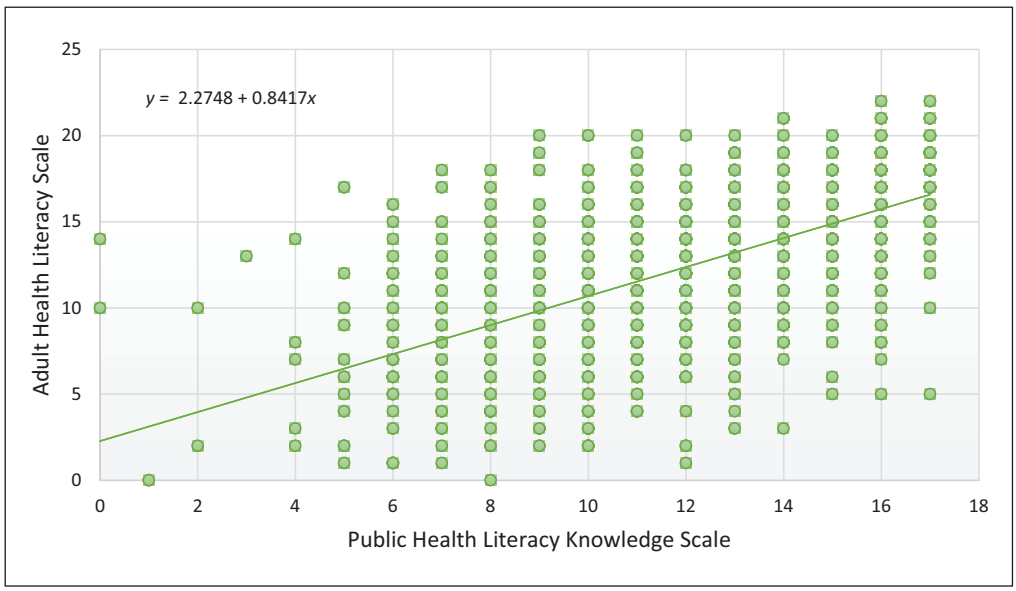

Figure 2. The scatter plot of adult health literacy and public health literacy knowledge.

item, citing that both viruses and bacteria are considered similar microorganisms detrimental to health, thus public interpreting both as the same. In this sense, having a high level of PHL may also assist with combatting antibiotic resistance, a substantial health issue.

Aging and losing cognitive functions are significant barriers to improving HL (19). In univariate analysis, PHL decreased with age, but the significance was lost after controlling for other factors. Similarly, the literature has reported no relationship (20,21). Since HL depends on individual skills and does not rely on support from others, age may have played a more prominent role than PHL.

Many studies have investigated the impact of gender on HL and reported contrasting findings, such as higher HL for males versus higher HL for females, and the reason for this is still unclear (22,23). We

Table 4. The results of the multiple linear regression analysis of the related factors.

Variables	*Coefficient (ß) (95% CI)*		
	Model 1	*Model 2*	*Model 3*
	*F=30.324***, R^2=0.168*	*F=21.665***, R^2=0.174*	*F=37.003***, R^2=0.342*
Age 18–39 (reference: 61 and above)	0.013 (–0.006)–(0.032)	0.006 (–0.013)–(0.026)	–0.006 (–0.025)–(0.013)
Age 40–60 (reference: 61 and above)	0.016 (–0.002)–(0.034)	0.012 (–0.007)–(0.030)	0.001 (–0.016)–(0.018)
Sex (reference: male)	0.005 (–0.006)–(0.016)	0.005 (–0.006)–(0.017)	0.000 (–0.010)–(0.010)
Marital status (reference: married)	–0.005 (–0.017)–(0.007)	–0.006 (–0.018)–(0.006)	0.000 (–0.011)–(0.010)
High income (reference: low)	0.009 (–0.011)–(0.029)	–0.002 (–0.023)–(0.020)	**–0.027 (–0.046)–(0.008)****
Middle income (reference: low)	0.010 (–0.007)–(0.028)	0.003 (–0.015)–(0.022)	**–0.021 (–0.037)–(0.004)***
Middle school and high school (reference: primary school and below)	**0.032 (0.016)–(0.047)*****	**0.029 (0.013)–(0.045)*****	0.008 (–0.006)–(0.022)
University and above (reference: primary school and below)	**0.094 (0.075)–(0.112)*****	**0.090 (0.071)–(0.108)*****	**0.044 (0.027)–(0.061)*****
Moderate fondness for reading (reference: low)	**0.021 (0.006)–(0.035)****	**0.018 (0.003)–(0.032)***	0.000 (–0.013)–(0.013)
High fondness for reading (reference: low)	**0.053 (0.037)–(0.069)*****	**0.049 (0.032)–(0.065)*****	**0.015 (–0.000)–(0.030)***
Residing in an urban area (reference: rural)	**0.022 (0.009)–(0.035)****	**0.024 (0.011)–(0.037)****	**0.018 (0.006)–(0.031)****
Non-obese (reference: obese)		0.000 (–0.019)–(0.020)	–0.005 (–0.022)–(0.012)
Smoking (reference: non-smokers)		0.002 (–0.010)–(0.013)	0.001 (–0.009)–(0.011)
Exercising (reference: non-exercisers)		0.009 (–0.003)–(0.020)	–0.001 (–0.011)–(0.009)
Moderate general health perception (reference: bad)		0.012 (–0.014)–(–0.038)	–0.001 (–0.024)–(0.023)
Good general health perception (reference: bad)		**0.029 (0.003)–(–0.055)***	0.000 (–0.024)–(0.025)
Chronic disease presence (reference: non-present)			–0.007 (–0.019)–(0.005)
Two hospital admissions (reference: one admission)			**0.015 (0.003)–(0.028)****
Three hospital admissions (reference: one admission)			**0.027 (0.012)–(0.042)*****
Four or more hospital admissions (reference: one admission)			**0.040 (0.026)–(0.054)*****
Hospitalization (reference: non-hospitalized)			–0.008 (–0.023)–(0.006)
Visual problems (reference: no problem)			–0.008 (–0.022)–(0.006)
auditory problems (reference: no problem)			**–0.023 (–0.045)–(0.001)***
Health literacy			**0.296 (0.266)–(0.325)*****

*$p < 0.05$
**$p < 0.01$
***$p < 0.001$.
CI: confidence interval

found no significant difference in PHL levels for genders in the study, similar to other studies (13,20). Collins *et al*. (24) reported that gender does not play a role for an individual in understanding and engaging in community engagement, which may explain why gender had no impact on PHL.

Education is one of the most critical aspects of social capital, composed of social trust and participation. Thus, education may implicitly create an environment where individuals participate in community health events (25). In the study, PHL was found to increase with education level. Various studies also reported similar findings (20,26). However, in a study by Krmac *et al*. (21), education level was not a significant factor among public health concepts of HL. The discrepancy may have resulted from using different measurement tools.

Health literacy has a tangible impact on healthcare utilization, hospital admissions and the usage of preventive public health measures (27,28). In this study, individuals who visit hospitals more than once a year were found to have higher PHL levels. Since the study was conducted on volunteers who visited PHCs, those who visited hospitals/PHCs more often may have been represented more, thus skewing the results.

The clinical approach to HL has been the main factor driving researchers to distinguish between HL and PHL. Nevertheless, in the grand scheme of things, both are still focused on the capacity of the individual to find, understand and evaluate the information they receive. Hence the assessment of HL and PHL may as well be made conjointly (5,6). In the study, there was a positive relationship between the PHL and HL levels of the participants. Arikan and Tekin (13) also reported a correlation between PHL and HL in their study.

This study had some limitations. The cross-sectional study type limits our results in causality. As the population of this study included those who visited a PHC, it is not representative of the general public. Despite these limitations, this study is one of the first large-scale studies to assess the PHL and related factors in Turkey and may be considered a milestone for the future of public health.

Conclusion

Our study group had a moderate knowledge level of PHL. Income, education, hospital admission, area of residence, auditory problems and HL were related to PHL. Because the groups with low educational levels struggled with PHL the most, efforts to increase PHL should prioritize the individuals who did not receive higher education. Also, it should be noted that campaigns focused on clinical and individual HL may also provide insight into PHL. Population-based studies on PHL with more assessment tools and extensive samples are needed to draw definitive conclusions.

Author's note

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Ethical approval

The ethical permission was obtained from Eskişehir Osmangazi University's non-interventional clinical trials committee in June 25th, 2019.

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Original Article

Mental health help-seeking in Mexico

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Abstract: Most people in need of mental health services in Mexico do not seek formal support or professional services to address their mental health needs. Understanding help-seeking behaviors is crucial to addressing underutilized mental health services and to leverage health promotion efforts. Data were collected as part of a larger research project on stigma and help-seeking for mental-health-related concerns in Mexico. A convenience sample of 469 adults residing in Mexico City participated in the study using an experimental vignette methodology assessing stigma toward individuals with mental health conditions, along with characteristics and demographic correlates of help-seeking. All survey measures were administered in Spanish. A structural regression was conducted for the outcome 'openness to professional help seeking for mental health problems' as a latent variable. Compared with males, females were more open to professional help seeking ($b = 0.09$, $p = 0.038$), as were people who endorsed higher spirituality ($b = 0.01$, $p = 0.006$); while people who experienced self-stigma were less open to professional help-seeking for mental health concerns ($b = -0.15$, $p = 0.005$). Self-stigma was a major driver of low service utilization. Contrary to previous studies, spirituality was a significant positive predictor of professional help-seeking. A more nuanced understanding of mental health help-seeking in Mexico can be useful for outreach efforts to increase service utilization both in Mexico and among Latinos in the United States (US). Given historical, geographic, and cultural ties with the US, it is important to understand mental health help-seeking in Mexico, which may relate directly to help-seeking behaviors in many US Latinos who have immigrated to the US. Directions for future research and practice implications are discussed, including a roadmap for health promotion activities.

Keywords: Latinos, Hispanics, help-seeking, mental health, service utilization, stigma, Mexico

Introduction

Despite recent advancements in acknowledging mental health as a public health concern, Mexico continues to face significant challenges in promoting mental wellbeing and providing accessible mental health services. Mental health promotion is essential for overall population wellbeing, but it is lacking in Mexico, a country grappling with a mental health crisis marked by high prevalence rates of mental disorders, limited resources allocated to mental health services, and low mental health services utilization

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(1). Lifetime prevalence of any mental health disorder in Mexico is 26.1%, with the most prevalent diagnoses being alcohol use disorder (AUD) and major depressive disorder (MDD), affecting 7.6% and 7.2% of the adults, respectively, at any given time (2). Yet, only 24% of those in need of psychiatric care utilize any mental health services (3). Most people with severe mental health diagnoses (76.2%), such as schizophrenia or bipolar disorder, 77.9% of those with more moderate mental health disorders, and 87.4% of those with mild disorders, receive no mental health treatment (4). These grave mental health challenges do not exist in isolation; rather, they exist against a backdrop of significant health disparities and barriers to effective health promotion exacerbated by the unequal distribution of healthcare resources and limited health education in general, and especially in marginalized communities.

Access to mental health care is an international public health challenge and an important consideration when discussing help-seeking behaviors (5,6). Without treatment, mental health problems can have staggering implications for individuals and society, with consequences including unnecessary disability resulting in diminished quality of life, poverty, lost productivity, impact to the local economy, and increased healthcare costs (7).

Seeking help for a mental health disorder is a critical first step to accessing and receiving mental health care (5). A variety of sociodemographic factors, including age, gender, level of education, geographic location, religiosity, socioeconomic status (SES), and stigma, have been found to predict help-seeking behavior, including seeking professional help for mental health concerns (5,8). In addition, for Mexican adults, economic barriers, logistical barriers such as lack of transportation or limited availability of services in one's neighborhood, the belief that mental health disorders are associated with personal weakness, and lack of faith in the system due to failed previous healthcare experiences, are commonly endorsed barriers to seeking help (9,10). Mexicans with high levels of religiosity often turn to faith-based healing as a form of alternative treatment and are less likely to seek professional mental health treatment (11). Further, Mexican men have been found to be less likely to engage in professional help-seeking behaviors, in part due to conformity of masculine roles in the culture (12,13). Many of these factors could be addressed through increased health promotion efforts, as presented later in this paper.

Once a decision is made to seek help, individuals with mental health disorders are required to overcome additional, non-logistical barriers to access mental health care, including social stigma, discrimination, comorbidity of mental health disorders and non-communicable diseases, and the presence of additional mental health disorders (4,14). Mental health stigma is widely present in Mexico (15,16). Even with increased knowledge of mental health disorders, negative attitudes towards mental health and help-seeking may prevent individuals from getting the necessary care. This results in those affected becoming more likely to hide their symptoms and to seek help only after years of suffering or if symptom progression gets so severe that they can no longer function (17). Many of these factors are addressable through increased health promotion efforts.

Untreated mental health conditions are a significant burden to society, communities, families, and the individuals managing them. This research seeks to better understand the factors contributing to mental health help-seeking in Mexico. More specifically, the study investigated the following questions:

1. What are the attitudes toward professional help-seeking for mental health concerns among Mexican individuals?
2. What sociodemographic characteristics are associated with Mexican individuals' help-seeking attitudes?

Materials and methods

Data for this paper were collected as part of a larger research project on stigma and help-seeking in Mexico City — the most populous and well-resourced metropolitan area in Mexico. A convenience sample of 469 adults residing in Mexico City participated in the study, which used an experimental vignette methodology to assess various domains of stigma toward individuals with mental health conditions. Before data collection, this study received ethics approval from University in Mexico and approval from the Institutional Review Board

(IRB) of American University. A bilingual English/Spanish-speaking research team, recruited from University in Mexico and trained jointly by faculty from Mexico and the US, street-recruited a convenience sample of participants from various public spaces in Mexico City (e.g., shopping malls, markets, churches, social service agencies, etc.).

To participate in the study, interested participants had to be at least 18 years of age at the time of data collection and reside permanently in Mexico City. Eligible participants were given verbal information, in Spanish, concerning eligibility criteria, purpose of the study, time of participation, and potential risks and benefits. To ensure the privacy and anonymity of participants, as well as to reduce potential response bias, the research team received a waiver of documented written consent from the IRB. After eligibility was established, if the individual agreed to participate, verbal consent was obtained, and a research assistant read the survey questions aloud to the participant and recorded their responses verbatim, in written form. All survey measures were administered in Spanish. Measures not originally available in Spanish were back translated from English before survey administration by a professional translation team with input from faculty at the Mexico University, to capture the linguistic nuances of the local community. The entire instrument took approximately 45 min to complete, and participants were given a backpack with the logo of the Mexico university (approximate value $15 USD) to compensate them for their time (the backpack was used to allay concerns from the Mexico team about cash incentives, including security, logistics, and any potential concerns of being associated with efforts to sway voters).

Measures

Demographics and familiarity with mental health conditions

Demographic variables included: age, gender, marital status, parental status (i.e., with/without children), highest level of education, employment status, and subjective financial circumstances. Participants were asked three questions to assess their previous exposure to someone with mental health issues: whether they, any of their friends, or any of their family members had mental health problems. If they replied yes to any of these questions, they were classified as having some familiarity with mental health issues.

Spirituality

Spirituality was measured with six items extracted from the Daily Spiritual Experiences Scale (DSES) (18). Items were rated on a 6-point Likert-type scale ranging from 1 = never or almost never to 6 = most of the day every day. The total score of the six items was summed, with higher scores indicating higher levels of spirituality.

Stigma

Public stigma was measured with the Devaluation of Consumer Families Scale (DCFS) (19,20) which consists of seven items measured on a four-point Likert scale from 1 = strongly disagree to 4 = strongly agree. Negatively worded items are reverse coded before summing all items, so that a higher score indicates a higher level of public stigma.

Self-stigma was measured using the Stigma Concerns about Mental Health Care Scale (SCMHC) (21). The three items measure self-stigma using the following prompts: *I would not want to receive treatment for depression because. . .* followed by 'embarrassed to talk about personal matters with others,' 'afraid of what others might think,' and 'family members might not approve.' Possible responses were *agree*, *disagree*, and *I don't know*. If a person answered *agree* or *I don't know* to any of the three questions, they were categorized as showing signs of self-stigma; participants who answered *disagree* to all the three questions were categorized as showing no signs of self-stigma.

Attitudes and beliefs about help-seeking

Openness to seeking help for mental health issues was measured using the Attitudes Toward Seeking Professional Psychological Help, Short Form (ATSPPH-SF) (22). The ATSPPH-SF is a 10-item scale that measures responses to questions related to people's beliefs about help seeking on a 4-point Likert scale where 0 = disagree, 1 = probably disagree, 2 = probably agree, and 3 = agree. Negatively worded items are reverse scored and items are then summed, with higher scores indicating more positive attitudes toward seeking

professional psychological help and lower levels of stigma about mental illness.

Statistical analysis

Data analyses were completed using SPSS 28 and Mplus 8.4 (23). Data were checked for normality. Maximum likelihood estimation was used, along with robust standard errors and model fit statistics to account for departures from normality and to account for missing data. Cases with missing values were less than 5% (n = 21, 3.5%). Counts and percentages were calculated for categorical variables and means and standard deviations were calculated for scale variables. Before fitting full structural equation models, a measurement model was checked using a confirmatory factor analysis (CFA) framework to determine whether measures for constructs of interest had performed as expected in this sample.

Results

Psychometric evaluation of performance of study measures

ATSPPH–SF

Among the 10 items, the five reverse-worded items were dropped because they had low factor loadings — an approach employed in previous studies. The five positively worded items were used to represent the attitudes towards seeking professional psychological health. The model fit for this measure was adequate: $\chi^2(5) = 14.03$, $p = 0.02$; comparative fit index (CFI) = 0.97, Tucker–Lewis index (TLI) = 0.94, root mean square error of approximation (RMSEA) = 0.06, 90% confidence interval (CI) [0.02, 0.09], standardized root mean square residual (SRMR) = 0.03. Model-based reliability was $\hat{\rho}_{SEM} = 0.71$.

DCFS

Similar to ATSPPH-SF, only the four positively worded items were used due to low factor loadings for the reverse scored items. CFA showed an adequate model fit: $\chi^2(2) = 7.69$, $p = 0.02$; CFI = 0.98, TLI = 0.95, RMSEA = 0.07, 90% CI [0.02, 0.12], SRMR = 0.02. Model-based reliability was $\hat{\rho}_{SEM} = 0.77$.

DSES

For the spirituality measure, a scree plot was first checked to verify the scale was unidimensional. A one-factor CFA was then fitted with the data. The model had an adequate fit: $\chi^2(9) = 35.423$, $p < 0.001$, RMSEA = 0.080, 90% CI [0.053, 0.108], CFI = 0.964, TLI = 0.940, SRMR = 0.031. Since the factor loadings of each of the six items were very close to one another, the total score for the six DSES items was used to represent spirituality in this study. The composite reliability for the DSES ($\hat{\rho}_{SEM}$) is 0.93.

Univariate and bivariate results

Sample sociodemographic characteristics and descriptive information of the outcome variable are summarized in Table 1. The mean age of participants was 37 years old (Mean = 37.28, SD = 14.31). The sample was almost evenly split on gender, with 293 (49.2%) identifying as female and 302 (50.8%) as male. Just over half of the sample (n = 308, 51.8%) said they were not married. Two-thirds (n = 399, 67.3%) were employed at least part time at the time of data collection. In terms of subjective financial circumstances, just over a third (n = 216, 36.2%) indicated that they 'did not have enough money' to meet their expenses. Almost half of the participants (n = 267, 46.1%) indicated that they did not know anyone with a mental health problem. Seven in 10 (n = 425, 71.3%) reported no self-stigma towards mental health concerns. On the DSES, the sample mean of 14.58 (SD = 8.27) on a scale of 0 to 30 indicates a moderate level of spirituality in this study sample. On the DCFS, the average sample mean of 2.38 (SD = 0.65) on a scale of 1 to 4 indicates a moderate level of public stigma towards mental health issues in this study sample. Lastly, on the key outcome variable — attitudes towards seeking professional mental health services — the average sample mean of 3.29 (SD = 0.60) on a scale of 1 to 4 indicates a high level of openness to professional help with mental health problems.

Structural regression

After an adequate measurement model was established, a structural regression was conducted with the outcome *openness to professional help seeking for mental health problems* treated as a latent variable. The predictors of the model include

Table 1. Sociodemographic characteristics of participants.

Categorical variables	*n*	%
Gender		
Female	293	49.2
Male	302	50.8
Current marital status		
Not married	308	51.8
Married/common law	287	38.2
Parental status		
No child	245	41.2
With child(ren)	350	58.8
Level of education		
Secondary school or less	144	24.2
High school	154	25.9
Some college/Technical school	148	24.9
College degree or higher	148	24.9
Employment		
Full-time	255	43.0
Part-time	144	24.3
Unpaid employment	134	22.6
Not employed	60	10.1
Financial Circumstances		
Not enough money	216	36.2
Breaking even	197	33.1
Extra money	183	30.7
Exposure with mental health problems		
No	267	46.1
Yes (anyone including friends and/or family members)	312	53.9
Self-stigma		
No	425	71.3
Yes	171	28.7

Continuous variables	n[b]	M	SD	Range
Age (years)	595	37.28	14.31	18-81
ATSPPH-SF[a]	596	3.29	0.60	1-4
DCFS[a]	596	2.38	0.65	1-4
Spirituality	596	14.58	8.27	0-30

ATSPPH-SF, attitudes toward seeking professional psychological help, short form; DCFS, devaluation of consumer families scale.
[a]The average score of items used in the study was displayed for the descriptive purpose. The constructs were treated as latent variables in the regression analysis.
[b]$N = 596$.

age, marital status, gender, parental status, financial status, education, employment, exposure to mental health problems, spirituality, public stigma, and self-stigma; public stigma was treated as a latent exogenous variable. Detailed in Table 2, the model explained 10.3% ($p = 0.001$) of the variance in openness to help-seeking. Among the 11 predictors, gender, spirituality, and self-stigma significantly predicted openness to professional help-seeking for mental health concerns. Compared with male

Table 2. Regression of associations between openness to help seeking and sociodemographic characteristics of respondents.

Variable	*B*	*SE*	*t*	*P*
Age	0.001	0.002	0.39	0.70
Married/common law	–0.06	0.05	–1.11	0.27
Female	0.09	0.04	2.08	0.04**
Have child(ren)	–0.04	0.06	–0.58	0.56
Financial status[a]				
Breaking even	0.03	0.05	0.61	0.54
Enough money	0.03	0.05	0.62	0.54
Education[b]				
High school	–0.06	0.07	–0.87	0.39
Some college	–0.01	0.06	–0.22	0.83
College degree or higher	0.01	0.07	0.08	0.94
Employment [c]				
Part-time	0.03	0.09	0.38	0.70
Unpaid employment	0.14	0.08	1.72	0.09
Not employed	0.11	0.08	1.44	0.15
Exposure to mental health problems	–0.002	0.04	–0.04	0.97
Spirituality	0.01	0.003	2.74	0.006**
Public stigma	–0.03	0.04	–0.72	0.47
Self-stigma toward treatment for depression	–0.15	0.05	–2.81	0.005**
R^2	0.103	0.032	3.19	0.001**

R^2, variance in the dependent variable explained by the regression model; SE, standard error.
[a]Reference group = United States.
[b]Reference group = Secondary school or less.
[c]Reference group = Full time.
*$p < .05$, **$p < .01$.

participants, female participants were more open to professional help-seeking ($b = 0.09$, $p = 0.038$), as were people who endorsed higher spirituality ($b = 0.01$, $p = 0.006$); people who reported self-stigma were less open to professional help-seeking for mental health concerns ($b = –0.15$, $p = 0.005$).

Discussion

Individuals in Mexico continue to have low levels of mental health service utilization despite high prevalence of mental health disorders (1). Moreover, there is a lack of current research that explores predictors of mental health help-seeking behaviors in Mexican adults. To understand this area more in depth, this study examined predictors of attitudes towards mental health and professional help-seeking in a homogenous sample of adults in Mexico City.

Several predictors of attitudes toward mental health help-seeking commonly found in the literature were not found to be significant in this study. For example, SES is frequently correlated with help-seeking, especially in those reporting higher levels of income. Two proxy measures of SES were included in this study, education, and financial circumstances (i.e., 'not having enough money to meet their needs'), and neither were found to be a significant predictor of attitudes toward help seeking, which is consistent with Zimmerman (24) but inconsistent with work by Lorenzo-Blanco and Delva (25), which found that individuals with higher incomes and with at least 16 years of education (i.e., higher SES) found formal services more helpful compared with individuals with lower incomes and less education. Both articles are more than 10 years old and the relationship between income and help-seeking may have changed over time. It is also worth considering that Mexico City is a large (>25 million people), multicultural, and very progressive metropolis where openness might be more common, as compared with smaller

cities and more rural areas. Moreover, given its size and status as Mexico's capital, it is also much better-resourced than many other regions in terms of health and mental health services, and health promotion efforts are perhaps more concentrated in a city the size of Mexico City. The relationship between SES and help-seeking is complex and warrants further study, especially in populations with lower income and lower formal education, like those in this study, who reside in Mexican communities distinct from Mexico City in their size, resources, and health promotion efforts.

Recent research on the relationship between exposure to mental health problems (i.e., knowing anyone with a mental health problem, including friends and/or family members) and attitudes toward help-seeking behaviors tends to be positive, such that those with greater familiarity will engage in less stigmatizing behaviors and have a greater openness to mental health help-seeking (6). However, in this study respondents' exposure to mental health problems was not significantly related to mental health help-seeking. This may be due, in part, to an unexpectedly high percentage of respondents in this study (46.1%) endorsing having no familiarity with someone experiencing a mental health concern. The high percentage of individuals indicating no previous exposure to someone with a mental health condition speaks to the potential for those with mental health concerns to hide their symptoms and potentially not seek help due to perceived public stigma toward mental health conditions. Also, ours was a community-recruited sample, not a clinical sample and, as such, many respondents could have been wary of disclosing any connection with individuals struggling with mental health concerns. Further research into which groups of individuals in Mexico have low, moderate, or high exposure to those with mental health concerns is warranted, given the significant mismatch between the high diagnostic and symptom prevalence cited in the literature and self-report of previous exposure to those with mental health concerns in our study.

Just over a quarter (28.7%) of participants in this study indicated self-stigma about mental health, with these participants also endorsing less openness to seeking professional help for mental health concerns. This means that, if all other factors are held constant, those endorsing self-stigma will have 0.15 points lower (on a 4-point scale) openness to seeking professional help for mental health concerns. This finding is consistent with previous research in this area suggesting that self-stigma is often negatively associated with seeking help for mental health conditions (14). Thus, interventions designed to address self-stigma toward mental illness within the Mexican context are currently warranted. Health promotion efforts, including raising awareness through targeted campaigns, expanding access, attending to cultural considerations, developing school-based mental health programs where conversations about mental health start early, and policy advocacy, have been found to combat stigma. These are important areas for practice and policy efforts in Mexico.

Also congruous with previous research, female respondents were more likely to seek help for mental health concerns than men (5,26,27). This finding has been hypothesized in studies with similar results as being influenced by gendered cultural norms around the role of masculinity (13) within Mexican culture. Often, men are expected to be self-sufficient, and admitting that they have a problem and seeking external assistance for it may be perceived as weakness. Health promotion efforts that seek to weaken the connection between mental health or asking for help and 'weakness' might be useful to address this gender disparity in help-seeking.

Finally, spirituality was found to be a significant predictor of help-seeking, with individuals endorsing higher spirituality being slightly more open to seeking help. This is a factor that is often considered to be a major predictor of help-seeking attitudes among Latinos (28). However, in previous studies conducted in Mexico and with Latinos in the US, higher levels of spirituality/religiosity were associated with less positive attitudes toward professional help seeking (29,30). This inconsistency could be explained, at least partially, by the characteristics of Mexico City and its residents, as described earlier. More research in other Mexico communities could help us better understand this relationship. The finding also speaks to the ongoing need for more research concerning the complex interplay between religiosity and help seeking, which may change based on one's religious tradition, or may evolve as faith, spirituality, or religious beliefs and practices change over time. It also highlights opportunities for religious leaders to assist their congregants with seeking professional mental health treatment when needed (31). There were examples of

this during the early days of COVID vaccination efforts, when religious leaders were being publicly vaccinated in their congregations and many members of their communities followed suit. Religious leaders speaking openly about mental health concerns and the need to seek treatment could be an important health promotion effort.

Limitations

These data were drawn from a community-based convenience sample of respondents from Mexico City. Caution should be exercised as results may not be generalizable to residents of other areas of Mexico, particularly those residing in more rural and less well-resourced areas. Similarly, social desirability bias may have impacted participant responses, as the survey was administered orally by the research associates, and participants also offered an oral response to the questions. Although this allowed for participation of those with limited levels of literacy, this method of survey administration may have potentially impacted the results. Also, this was a cross-sectional study measuring help-seeking attitudes at one point in time. Future longitudinal research examining willingness and openness to help-seeking across time may be warranted to further explore how help-seeking attitudes and behaviors may change or evolve.

Implications and conclusions

Despite the limitations, this research addresses a critical gap in the literature on the limited knowledge on attitudes of Mexican residents concerning seeking professional help for mental health concerns and identifies important areas for health promotion efforts. Just over a quarter of participants in our study endorsed self-stigma toward mental health concerns, and they are certainly not alone. Self-stigma is a phenomenon that has been reported in many countries, represents a barrier to seeking treatment, and also has negative psychological sequelae in people (9,32). Low levels of psychological help-seeking in Mexico and Latin America are often tied to the negative views about mental health problems (33). These negative views may be perpetuated by cultural beliefs about self-reliance, not having enough willpower, or keeping secrets in the family (33).

Stigma, however, has been shown to be ameliorated by health promotion efforts, and it can be addressed. Yet, Mexico currently has no identified publicly funded health programs focused on promoting mental health treatment seeking, and no large, organized, health promotion efforts designed to eradicate the social stigma associated with these conditions and their care (34). Mental health professionals often labor in isolation as they try to combat stigma and shift people's beliefs so that communities can have increased knowledge and confidence in treatment and, thus, become more receptive to seeking and accepting help. Providers cannot do this alone, and must partner with government and non-government organizations, academics, K-12 (kindergarten to 12th grade) schools, faith leaders, media, and grass roots organizations, to disseminate accurate information about mental health and the symptoms of common mental health concerns, and to reduce stigma, enhance services, and promote acceptability and access. This is of particular importance in relation to men, who are, in general, more reluctant to engage with formal treatment providers. By leveraging expanded health promotion efforts to change the narrative of 'help seeking as a sign of weakness' to 'help seeking as a way to take care of one's responsibilities and one's family,' treatment providers can encourage those in need of formal services to seek them out when needed. Moreover, the ongoing development of mental health service infrastructure and implementation of evidence-based treatment approaches are essential to increasing access to treatment and quality of care, thus supporting increased and ongoing engagement with formal systems of care.

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Original Article

Exploring the role of community health organizations in promoting public health during a health crisis: a qualitative study of COVID-19 responses in South Africa and Zambia

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Abstract: While the COVID-19 pandemic amplified the need for accurate and actionable health information, uncertainty and the proliferation of misinformation have contributed to significant mistrust in public health messages, especially among marginalized communities. Community health organizations can play an important role in creating trust and providing targeted health information to vulnerable groups. This qualitative study, which is focused on community health organizations supporting vulnerable populations in South Africa and Zambia, finds that during the pandemic, community health organizations expanded their roles and leveraged their established access and trust to support the communities they serve with health education and services. However, the reliance on external support limits the organizations' ability to respond in an effective and efficient manner during health crises.

Keywords: COVID-19, community health organizations, health education, health information

Introduction

The COVID-19 pandemic strained already struggling public health systems worldwide (1–5). Ensuring that vulnerable communities have access to accurate and actionable health education and information is critical for equitable public health responses and for reducing the spread of disease globally (6–8). Although governments often serve as a primary source of public health information, marginalized populations are less likely to receive information from government channels (9). Furthermore, mistrust in government and public health systems, particularly among marginalized groups, can erode the effectiveness of public health campaigns (10–13). During the pandemic, mistrust has grown due to the spread of misinformation, rumors, and global health conspiracy theories (14–18). In South Africa and Zambia, evidence suggests substantial mistrust in government sources. This has been observed in relation to information circulating about the COVID-19 crisis (10,11), making it important to understand the challenges faced.

Community health organizations can play an essential role in providing reliable information that reaches vulnerable populations and marginalized communities better, including the following: those with limited access to healthcare and safe housing and transportation; those experiencing racism, discrimination, and violence; those suffering from economic instability, food insecurity, environmental pollution, and health complications due to

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comorbidities and other noncommunicable diseases (NCDs); those with limited literacy; and linguistic minorities (19–21). For this study, community health organizations are defined as organizations that operate in local communities and are staffed primarily by local people, with the majority of the governing body and staff consisting of residents. Their primary operating offices are in the same country and region, and their areas of concern and program solutions focus on local issues. They are also actively engaged in providing health services and advocacy, and/or the delivery of health education and information services at the community level.

Historical evidence has shown that given their deep contextual understanding, community health organizations operating in local communities have been particularly successful in developing well-received targeted health messages. By providing targeted health messages and support, these community health organizations can support people to increase control over their health and improve it. For example, during the recent Ebola outbreak, international nongovernmental organizations, intergovernmental organizations, regional and national governments, and higher education institutions partnered directly with community health organizations and leveraged community health worker (CHW) programs, resulting in valuable support for mitigation efforts (22–25). Other illustrative examples include the immense importance of community organizations' role in health promotion by supporting patients during the HIV/AIDS epidemic (12,26–28) and their enduring efforts to eradicate polio among the hardest-to-reach communities (29,30).

Emerging evidence during the COVID-19 pandemic reveals the importance of worldwide community-level responses (31). Community health organizations have played a vital role in filling the gap in burdened public health systems to meet the health education and information needs of the most vulnerable groups in the community. To address the swift and widespread impact of the COVID-19 pandemic, these organizations were driven to expand their role quickly to provide novel and evolving health information to constituents while operating at a limited capacity.

Here, we examine the experiences of community health organizations with regard to health promotion in their responses to the COVID-19 pandemic in South Africa and Zambia. The response to the pandemic by community health organizations has been critical in sub-Saharan Africa, given an already struggling public health infrastructure, a shortage of healthcare workers, barriers to accessing health facilities, and significant mistrust of government-provided health information, leaving marginalized communities in South Africa and Zambia at exceptionally high risk for inadequate healthcare during the pandemic (32,33). While both the governments and international health organizations operating in South Africa and Zambia have relied on community health organizations and workers to provide primary and emergency health services in the past, they have provided little support. These resource limitations may restrain community health organizations' ability to support communities' health needs (19,21,34). Given the reliance on community health organizations, the history of limited resources, and the nature of the crisis, it is critical to understand the role of these organizations in promoting public health in South Africa and Zambia.

Our study uses qualitative interviews and thematic analysis to investigate the strategies, challenges, and needs of community health organizations involved in public COVID-19 education to understand their role in public health crises in relation to communicating health information and providing services to support their communities' improved well-being. This study seeks to understand how community health organizations in South Africa and Zambia responded to the pandemic and how limited resource support may have hindered their ability to address the health needs of marginalized communities. This study can illuminate the potential of community health organizations to fill gaps in mainstream public health education and bring about meaningful local-level responses during future public health emergencies.

Health promotion efforts by community health organizations

Community health organizations are uniquely positioned to understand how public health crises, such as the pandemic, have an impact on their community (35). Community health organizations understand local perspectives on public health issues, such as COVID-19, as well as susceptibility,

threats, and barriers in relation to vulnerable groups, for example, constituents who may be immunosuppressed from HIV/AIDS or have comorbidities from NCDs. By integrating their knowledge of local perspectives with their understanding of the needs of their local patients, these organizations can modify communication strategies accordingly by ensuring that the most relevant information reaches the populations that need it, and also address localized myths and misinformation (35). All the specialized knowledge that community health organizations have amassed about local needs, challenges, and lived experiences can help them adapt and craft simplified messages about communicable diseases and pandemics in ways most likely to be trusted and adopted by local communities. These tailored messages help reinforce the partnership between community members and health organizations by empowering people and communities to make healthy decisions that affect their lives.

Limitations to effectiveness in health education

There are limitations to the effectiveness of the community health organization model. Previous research has found that small community health organizations face significant structural and resource challenges when collecting and sharing information, knowledge, and resources with local communities (36). The reliance of community health organizations on largely voluntary workforces is one obstacle to consistency (36) due to the loss of paid staff during times when financial resources are reduced (19). Another is having to adapt their programs because of shifting donor interests, government priorities, or funding opportunities (37). With changing members of an organization, shifting identities, or inconsistent programs, the reliability, knowledge, and trust that communities invest in community health organizations can be broken. Additionally, low compensation levels among CHWs due to a heavy reliance on limited public or donor funding can cause resentment that may translate into distrust in the organization among beneficiaries in the community (37,38). This situation may occur when workers cannot provide care or information, which has an effect on their credibility, or through their attitudes, discussions, or experiences (21).

The embedded nature of community health organizations that builds trust in the first place can also cause trust issues. For example, living in the same community can test the workforce's ability to maintain confidentiality, which can strain trust (21). Social stigmas and local beliefs may also interfere with trust or access to health services (21). The potential limitations of the model illustrate the need for a greater understanding of the role that community health organizations play in health promotion during public health crises.

Methods

Sample population

A total of 18 community health organizations in South Africa and Zambia were included in the study. Criteria for inclusion in the study were the following: (a) active engagement in health services, advocacy, and/or delivery of health education and information services at the community level before the pandemic; and (b) involvement in health education efforts in response to COVID-19. While none of the community health organizations operated or were headquartered outside of sub-Saharan Africa, there was some variation in their areas of focus, operating size, target beneficiaries, and geographic focus. Of the 18 organizations, 12 operated nationally, and 6 operated strictly as local-level organizations. Of the 18 organizations, 12 were located in South Africa and 6 in Zambia, covering both rural and urban areas. Many of the organizations had long histories in the communities they served. The median time the community health organizations had been in existence was 13 years. The median size of the paid professional staff was 15 workers. Before the pandemic, many of these organizations also relied on large numbers of volunteers, up to as many as 500, and one organization relied solely on voluntary staff. However, the pandemic and related lockdowns caused most community health organizations to restrict or temporarily end their volunteer programs. Table 1 shows the number of organizations by characteristics.

The community health organizations were identified through their previous collaboration in shared global health networks and expanded via a snowball technique and internet search. In total, 25 community health organizations were identified, of

Table 1. Community health organization characteristics.

Characteristic	*N (%)*
Level of operation	
National	12 (67%)
Regional	6 (33%)
Country of operation	
South Africa	12 (67%)
Zambia	6 (33%)
NGO leader number of years at organization (median, range)	6 (1, 19)
Less than 2 years	2 (11%)
2–5 years	4 (22%)
6–10 years	6 (33%)
More than 10 years	6 (33%)
Age of NGO (median, range)	13.5 (1, 96)
Less than 5 years	1 (6%)
6–10 years	4 (22%)
11–20 years	9 (50%)
More than 20 years	4 (22%)
Paid staff members (median, range)	15 (0, 1500)
Less than 5	1 (5%)/
5–10	5 (26%)
11–30	5 (26%)
31–50	3 (16%)
51–100	2 (11%)
More than 100	2 (11%)
Engaged voluntary staff prior to pandemic	
Yes	12 (67%)
No	6 (33%)
Primary focus prior to pandemic	
Access to healthcare	8 (44%)
Infectious disease (HIV, TB, malaria)	7 (39%)
Maternal and reproductive health	6 (33%)
Gender-based violence	5 (28%)
Early childhood development	6 (33%)
Education	4 (22%)
Unemployment and poverty	4 (22%)
Target beneficiaries	
Women	8 (44%)
Men	2 (11%)
Youth	15 (83%)
Urban populations	10 (52%)
Rural populations	13 (68%)
Frontline/community health workers	2 (11%)
Migrants/refugees/asylum seekers	1 (5%)
Methods of communication with community	
Text messaging (SMS)	4 (22%)
Phone calls	6 (32%)

(Continued)

Table 1. (Continued)

Characteristic	*N (%)*
Email	3 (16%)
WhatsApp	11 (61%)
Facebook	8 (44%)
In person: door to door	10 (52%)
In person: hospitals, clinics, schools, markets	8 (44%)

Note: NGO: nongovernmental organization; SMS: short message service. The following categorizations are not mutually exclusive: primary focus prior to pandemic; target beneficiaries; and methods of communication with community.

which 18 consented to participate in the study. All participating organizations except two are entirely nongovernmental. The remaining two were hybrid organizations. To recruit organizations, we contacted the director (highest-ranking staff member) to request permission to include the organization in the study. We then recruited the director or a senior-level staff member nominated by the director to participate in the semi-structured interviews. Because of pandemic distancing restrictions, we recruited and communicated with participants virtually via email, phone, or WhatsApp. Participants held leadership roles in their respective organizations at the time of the interview and had been with their organizations for a median of six years.

Data collection

The data for this study were collected through semi-structured one-on-one in-depth interviews (IDIs) with participants over the Zoom video conferencing platform. Interviews were conducted by a South African member of the research team in Cape Town, South Africa. To promote open and honest reflection, both interviewer and participants were in private spaces where personal responses would not be heard. The interviewer was trained in community-based research methods and health promotion.

The interviewer used a semi-structured four-part interview protocol, which was co-designed by researchers from South Africa and the United States. The 25-question protocol focused on background information, local community knowledge, information dissemination, pandemic responses and impacts, and information and education experiences. In the first two sections, the interviewer asked questions about the participant and the organization's background as a health provider in the community. The sections were designed to understand the community health organizations' knowledge about their local communities and how that knowledge has an impact on the information and education they provide during health crises. The third section asked about the organization's response to the pandemic. The interview protocol concluded with a section focusing on the impact of the pandemic on communities and how communities received the information and education the organizations shared.

Data analysis

Interviews were transcribed verbatim via Zoom's transcription program and reviewed by the research team for transcription errors. Once transcribed, inductive analysis and constant comparative methods were used to code data systematically and identify key themes emerging from them through the thematic analysis process. First, all of the authors gained familiarity with the data by reviewing the transcripts. This process generated initial codes related to the research questions. Next, two separate authors independently coded every interview to maximize internal validity and coding consistency using Dedoose qualitative software by applying a priori codes related to the primary research questions. Two authors organized codes into potential themes that emerged through the coding process and presented them to the research team. The research team met multiple times to confer, and calibrate coding interpretation. During these sessions, the research team sought consensus on refining and recalibrating coding schemes and themes. Finally, agreement was reached, the themes were revised, and the final codes were selected. Each transcript was then analyzed for a second time by

two independent authors to ensure validity and consistency in applying the codes. The researchers then met, and based on this analysis reached consensus on the final themes.

Results

Three primary themes emerged from the analysis. First, as the pandemic spread, the community health organizations adjusted their services to respond to the pandemic's new challenges, which they did by taking on new community roles. Second, the community health organizations provided responsive COVID-19 health education and information programs. Third, they supported healthy communities by addressing challenges exacerbated by the pandemic.

In response to the pandemic, community health organizations frequently adjusted their services and filled new roles. They filled new partner roles, often liaising between government ministries of health or large international organizations and their local populations. In these roles, they supported local hospitals and government pandemic efforts. Here, they often advocated for their client communities. For example, one organization provided personal protective equipment to health workers on behalf of the government, while another sent staff to help with government screening and testing programs. The community health organizations also partnered with each other, providing their unique expertise to serve the same communities better. When discussing how their organization partners with other local organizations, one leader said:

> Our two organizations decided to figure out how we can bridge the gap in terms of information . . . We are very focused on rural [areas], and there's a gap in information for rural communities . . . We ended up identifying community radio stations because we thought that would be a viable platform during COVID . . . We developed a whole list of topics or talking points. Then we identified experts or informed persons, and we connected those people with community radio stations . . . As an organization, we work well with other organizations and are good at linking and connecting (IDI 8).

The community health organizations also adjusted their services by identifying community-specific concerns, which guided their responses to the pandemic and their work. One community health organization leader described the process of identifying community needs as follows:

> We had an obligation to better understand the communities within our learning site, and to also not make rash statements based on assumption, but to actually understand what is going on, on the ground. And then we tailored . . . what we did after we did the survey (IDI 8).

They then used the information they had gathered to tailor their programs to provide pertinent COVID-19-related health services, information, and education quickly.

The second theme that emerged was that the community health organizations provided responsive COVID-19 health education and information programs. Community health organizations use both social media and traditional forms of media to reach their communities with these programs. Given the constraints of the lockdowns and social distancing, most organizations used some form of social media to communicate with the public about COVID-19. WhatsApp and Facebook were the most commonly cited platforms and were deemed particularly effective at reaching younger populations. However, the organization leaders emphasized that many groups cannot be reached through the internet or social media, and radio was a popular platform for targeting rural populations. The community health organization leaders expressed that when they shifted to remote communications, they had an increased need for technical support, both in terms of greater technology access (e.g., a need for smartphones and tablet devices to communicate better with constituents) and support for using technology for both their own staff and the communities that they serve. One leader said:

> I think the shift to digital brings a lot of troubleshooting in terms of making sure you're using the right tools, making sure you do it in a way that's responsible . . . [so] that you're not excluding a whole range of the population because they're not online, as well as making sure that your use of digital space is a responsible one (IDI 1).

While there were substantial efforts to provide health information and education using remote methods, many community health organizations still utilized their physical presence in the community, especially to communicate with groups that were more difficult to reach. Posters and pamphlets were crucial materials used to deliver health information. Several community health organizations trained employees and CHWs to conduct home visits offering COVID-19 screening and education. An organization that visited homes found that many families had not heard of COVID-19.

> When [we] were doing home outreach, most people were actually surprised. They didn't even know [about COVID-19]. They hadn't even heard because they don't have cell phones, they don't have WhatsApp . . . most people needed to hear by word of mouth [which is] why we needed pamphlets . . . in both languages, English and Xhosa, so that people can easily understand (IDI 3).

However, there were limitations to and challenges for the community health organizations' ability to provide responsive COVID-19 programs. The community health organization leaders stated that staff members felt overwhelmed and wanted relevant, solution-driven information. They expressed a need for guidance to decipher and distill what one leader described as 'information overload' (IDI 14) and an 'overwhelming influx of COVID information', subsequently noting a desire for 'just [the] relevant information appropriate to you and to your constituency' (IDI 8). One leader said:

> [The organization program manager] is basically drowning in information . . . [They] are really struggling because there's just too much . . . finding relevant facts and information that's also . . . solution driven. . . . with our expertise, we can bring [this material] to a plan and work and beyond. That would be useful (IDI 1).

The leaders stressed that many recommendations and protocols they received regarding COVID-19 from government ministries of health and international institutions did not reflect their communities' challenges. For example, small living quarters and large families have an impact on the ability to comply with social distancing measures at home. The reliance on public transportation for essential tasks, like purchasing food or going to and from work, also has an impact on the ability to meet social distancing recommendations. Lack of access to clean water or masks hinders compliance with those recommendations. These challenges with regard to the recommendations frustrated the community members and health organizations. While the leaders were concerned about how this frustration would have an impact on compliance and trust in health information, they also desired support in making health information actionable.

Finally, community health organizations promoted healthy communities by addressing challenges exacerbated by the pandemic. Many of these organizations served vulnerable populations who faced a variety of other challenges, including food and housing insecurity, gang violence, HIV/AIDS, and NCDs, and struggled to overcome their distrust in the government's public health messages and the more extensive health system, and found it challenging to accept pandemic protocols and messaging. One leader stated: 'When it comes to the much bigger structures, people don't have much trust in the health systems at all' (IDI 16). Mistrust in information among disenfranchised youth, rural communities, and displaced persons created particular barriers for the community health organizations that they had to attempt to overcome.

Some communities viewed the pandemic as not a threat, or no more of a significant threat than their other concerns, as 'people have faced so much adversity that this is just one more thing' (IDI 5). This experience fed into a belief for some that COVID-19 was, as one leader stated, just another challenge: 'A lot of the people's mindsets currently is that, "you know what, we've survived AIDS, we've survived TB so that we will survive COVID as well"' (IDI 16). Leaders expressed the importance of delivering health information and education that addresses the adverse impacts of the traumas and experiences that these communities have already experienced. The community health leaders also focused on supporting health issues 'amplified by the crisis' (IDI 1) and developing programs to address the pandemic's economic impact on their

communities, which resulted in increased unemployment, food insecurity, and poverty. In discussing a food service program her organization started, one leader said:

> It's easy to tell everyone to go and stay in their own homes, but for the kids on the streets . . . they rely on donations or begging to get food . . . there are some families as well that have had nothing . . . those are some of the families that we are considering for this feeding program (IDI 6).

Another community health organization integrated its COVID-19 messages with additional resources in that it designated CHWs to visit families to discuss COVID-19 and identify those who could use more resources, such as food baskets.

Discussion and conclusion

Our study examines community health organizations' responses to the COVID-19 pandemic. While this pandemic is unique in the breadth and severity of its impact globally, the responses exhibited by the organizations in this study reflect the role that community health organizations play in local communities to help protect and meet the needs of the most vulnerable members of society during a public health crisis. Community health organizations are a critical component of health promotion. They are essential in delivering targeted health information to high-risk groups otherwise unreached by mainstream health education channels and empowering them to make healthy choices.

We found that community health organizations are uniquely positioned to deliver effective health education given the following: their familiarity with local customs and norms; their awareness of local resource constraints; their ability to identify locally prevalent myths and misinformation; their knowledge of the needs facing specific risk groups (e.g., women, children, migrants, people living with HIV/NCDs, etc.); and their access to local translators who can assist with the translation of health information. This understanding of multiple aspects of local communities is built on their pre-existing relationships of trust within the communities, which supports these organizations to adapt health messages as needed. Adapting the health messages and providing relevant and necessary services bolsters those trusted relationships.

Community health organizations can leverage established communication channels, including traditional platforms, social media, and other technology, as well as in-person methods of communication. They can also utilize their networks to identify and leverage locally trusted sources of information, such as local religious and traditional leaders, to assist with information dissemination. These methods of communication further build and validate the trust between community members and the organizations. This trust then serves as an endorsement for the legitimacy of the health information provided by community health organizations.

While the potential for these organizations to reach the most vulnerable members of society exists, our findings reflect the challenges community health organizations face in times of crisis. The loss of funding and lack of technology and health expertise to navigate an effective response render these organizations less effective, which could jeopardize the community's trust. Given the potential of community health organizations to serve the most vulnerable, this study underscores the formidable obstacles these organizations encountered. By spotlighting the challenges due to funding shortages, technological limitations, and a lack of health expertise, we can illuminate the complexities inherent in responding to public health crises. Furthermore, these insights can allow stakeholders to engage in collaborative problem-solving, innovative thinking, and the formulation of strategies that will potentially address these challenges.

The study illustrates the importance of contextual and actionable educational materials to bridge knowledge–behavior gaps. It suggests that support from governments, international organizations, and partners could enhance community health organizations' educational efforts and extend their reach through easily adaptable content and assistance with technological and safety challenges. Given their role in providing targeted messages to their communities, community health organizations could benefit from educational resources that can be easily modified for various contexts. Since creating health messages to match local language and culture is highly labor intensive, easily modifiable content would allow organizations to make more efficient use of their staff,

extending the reach of their health messaging. Community health organizations would also benefit from increased support for navigating technological and safety challenges in pandemic settings. Developing health education, resources, and information that engages and responds to communities requires time, empathy, and resources, which state responses may lack during health crises (31). While locally embedded organizations can support communities by their response to the pandemic, which involves engaging community members and successfully building confidence and trust in health messages and adherence to public health protocols, ultimately, they need sustainable funding sources to continue operating and set long-term goals for their programs, given these additional resource needs.

Our study contributes to a deeper understanding of the role of community health organizations in providing needed support and customized health education for vulnerable communities during the COVID-19 public health crisis. As we face future health crises, it will be critical for community health organizations to receive support to deliver health education and services to empower hard-to-reach groups effectively. Further research is needed to obtain a better understanding of the components of successful health interventions by community health organizations and their emerging needs, as well as those of communities.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Disclaimer

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Ethical approval and participant consent

Ethical approval for this study was obtained from the Institutional Review Board of Stanford University School of Medicine (Protocol ID 57373). Verbal informed consent was obtained from all participants before interviewing them.

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Supplemental material

Supplemental material for this article is available online.

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Consistent condom use among sexually active young adults in Ghana: an analysis of prevalence and associated factors

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Abstract: Consistent and proper condom use offers a safer, economically cheap and practically effective means of preventing HIV infection. Using the 2014 Ghana Demographic and Health Survey with a sample of 2779 sexually active youth (males = 682 and females = 2,097) in the age range 15–24, this study explored the prevalence of, and factors associated with consistent condom use among sexually active young adults in Ghana. Multivariate logistic regression was used to analyse the data. Our results showed that approximately 11% of the respondents reported consistent condom use in their previous sexual activity. Females were more likely than males to have used a condom consistently. The logistic regression results showed that females who had tested for HIV were less likely to use a condom consistently. However, those who have obtained family planning information from print media and those from the northern part of Ghana were more likely to practise consistent condom use. Furthermore, males who professed the Traditional African religion were less likely to use a condom consistently. In contrast, males in the rich wealth category were more likely to use a condom consistently. These findings underscore the need for behavioural change campaigns targeting young adults, particularly those who are sexually active, to encourage consistent condom use. These interventions should target young adults with less family planning knowledge, those who know their HIV status and those who profess the Traditional African religion.

Keywords: sexually active, condom use, young adults, HIV, Ghana

Introduction

Globally, young adults account for nearly half of all new HIV infections (1), and unsafe sex is one of the leading causes of disease due to the transmission of HIV/AIDS (1). HIV transmission is primarily heterosexual in sub-Saharan Africa (SSA), and Ghana is no exception (1,2). Indicatively, consistent condom use could be a safe, economically cheap and effective method of preventing sexually transmitted infections (STIs), including HIV and AIDS (1,3,4). However, a condom is only effective when used correctly and consistently (4,5).

Apart from the prevention of HIV/AIDS, consistent condom use can prevent other STIs and also unintended pregnancy, which is another reproductive health problem confronting adolescents and young adults. For example, in Ghana, about 12% of adolescent girls are either pregnant or mothers already, with one in every 10 births occurring among

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young people (6). This phenomenon makes condom use one of the reliable ways young adults can protect themselves from unintended pregnancies and STIs, besides having sex with an uninfected person (1,7). Previous studies on condom use among young adults focused on identifying and explaining the determinants of inconsistent condom use and are well documented (8,9). Some factors attributed to the inconsistent use of a condom include low perceived sexual satisfaction derived from condom use, low personal STI risk, condom fatigue, having a steady sexual partner and low condom self-efficacy (8,9). Some studies propose the need for behavioural campaigns to encourage self-efficacy in relation to condom use to improve take-up (8,10).

Although consistent use of a condom has an important role to play in providing safer sexual and reproductive health for young people, only a few studies have investigated the determinants of consistent use of condoms among young adults (7,11,12), whereas studies on the determinants of inconsistent condom use in general abound. Most studies on consistent condom use focus on sex workers, and observed that consistent condom use effectively prevented the transmission of HIV/AIDS (13). In a study on HIV risk perception and consistency in condom use among young adults in urban Cape Town, South Africa, it was observed that perceived risk of HIV/AIDS infection was not a significant determinant of consistent condom use, and consistency in condom use declined with increasing age (12). However, the same study indicated that the perceived risk of HIV/AIDS was associated with increased condom use (12). Studies on determinants of consistent condom use are important for public health in Ghana, given the fact that, increasingly, young adults are engaging in sexual activities at an early age and marrying later. The median age at first sex among people in the age range 25–29 in Ghana is 18.4 years, and 11% of women in the age range 25–49 had had their first sex by age 15 (6). The gap between age at first sexual intercourse and age at marriage is widening, with more people being sexually active before marriage than in the past (14,15). Evidence from Ghana suggests that being female, of a younger age, of low socio-economic status and living in a rural area are independently associated with early sex among sexually active young people (16). Further exploration of these factors indicated that young people from rich households residing in urban areas are less likely to initiate early debut. However, an interactive effect showed that female youth residing in urban areas from rich households were more likely to initiate early debut (17). The extent to which socio-demographic characteristics influence consistent condom use among these sexually active young people remains unexplored within the Ghanaian context.

To help understand how different multilayered factors interact in creating pathways to young people's sexual activity, including consistent condom use, various theoretical models have been formulated. In this study, we used the information–motivation behavioural skills model (18) and Campbell's community characteristic (19) as frameworks to guide the study. The information–motivation behavioural skills model (18) indicates that individuals will engage in self-protective behaviours, such as consistent condom use, when they know that such behaviours reduce the risk of infection, are motivated to engage in the behaviours and have the requisite skills and self-efficacy to do so. Campbell's community characteristic framework (19) also focuses on several community characteristics associated with reduced vulnerability to HIV infection such as condom use. These include availability of information and resources related to HIV prevention, awareness of socio-cultural conditions that predispose youth to risky behaviour, the community commitment to addressing threats posed by HIV and the presence of social networks that support behavioural changes among youth. Thus, exploring adolescents' consistent condom use requires an in-depth examination of factors both at and beyond socio-demographic, individual and family levels to encompass a focus on community systems as emphasised by the Ghana AIDS Commission's five-year strategic plan. Using the 2014 Ghana Demographic Health Survey (GDHS), this study's aim is to determine the socio-demographic factors associated with consistent condom use among sexually active young people in Ghana. The two main objectives of the study are as follows: (a) to determine the prevalence of consistent condom use among young people in Ghana; and (b) to examine the socio-demographic factors associated with consistent condom use among sexually active young people in Ghana. Our findings could be critical in developing HIV prevention strategies that encourage consistent condom use among sexually active young adults.

Methods

Sampling procedure and participants

The 2014 GDHS was conducted using a stratified two-stage cluster design consisting of 427 clusters, 216 in urban areas and 211 in rural areas. The first stage was a random selection of clusters, followed by a systematic selection of households at the second stage (6). The survey successfully interviewed 11,835 households, yielding a response rate of 98.5%. Moreover, 9396 and 4388 eligible females and males participated in the survey, producing response rates of 97.3% and 95.2%, respectively. For the current study, sexually active youths in the age range 15–24 who responded to the consistent condom use questions were used as the basis for analysis. Thus, a sample size of 2779 (males = 682 and females = 2097) was used for the current study.

Procedure

Data for this study were obtained from the 2014 GDHS. The GDHS is a nationwide survey with a representative sample of women and men in the age ranges 15–49 and 15–59, respectively ($N = 13,784$). The Ghana Statistical Service (GSS), the Ghana Health Service (GHS) and the National Public Health Reference Laboratory of the GHS supervised the 2014 GDHS. Ethical approval for the study protocol was given by the GHS Ethical Review Committee in Accra, Ghana and the Institutional Review Board of ICF International. The survey asked households questions related to HIV testing. Besides these questions, individuals were asked to state their age at first sexual intercourse during the last 12 months. Moreover, socio-demographic key indicators such as age, sex, place of residence, region, religion, education level and ethnicity were also part of the questions in the questionnaires. Each household selected for the GDHS was eligible for interview with the household questionnaire. Data collection was carried out by the 25 field teams from early September to mid-December 2014. Senior staff members from the GSS and the GHS coordinated and monitored the fieldwork. Paper questionnaires were used to conduct the interviews. After the interviews, field editors entered the questionnaire data into laptops, using passwords to protect the files. Electronic data files were transferred to the central office every few days via the secured Internet File Streaming System. Fieldwork monitoring was carried out by staff from the GSS and the GHS, and two survey technical specialists from the Demographic and Health Surveys Program. Data collection took approximately four months.

Measures

Outcome variable

The main outcome variable was derived from three questions answered by the survey participants. They were asked if they used a condom every time they had sex with their (a) third to most recent partner, (b) second to most recent partner and (c) most recent partner in the last 12 months. On each of these three occasions, the responses were 'Yes' and 'No'. A composite variable was created from these three variables to derive the variable 'consistent condom use' for participants who consistently used a condom on at least one occasion. Thus, this variable was coded as follows: 0 = No and 1 = Yes. The binary nature of the outcome variable necessitates the use of a logistic or probit regression for consistent estimates. The choice between the two estimators is based purely on preference.

Explanatory variables

The explanatory variables used in this study included residence (urban and rural), gender (males and females), religion, employment status, level of education, regions, HIV test status, source of family planning information, ethnicity and household wealth. The GSS constructed a wealth index from a household's ownership of selected assets, such as televisions and bicycles, materials used for housing construction and the type of water access and sanitation facilities. The index places individual households on a continuous scale of relative wealth. The GDHS, however, only provides a wealth quintile based on the wealth index. We further subcategorised the households into three wealth categories based on the reported wealth quintile: poor (quintiles 1 and 2), average (quintile 3) and rich (quintiles 4 and 5).

Statistical analyses

The estimation samples were analysed using STATA 16.0. We accounted for the survey design by using the weight and cluster variables in the data.

Doing this improves the precision of our estimates and ensures external validity. Consequently, our findings are nationally representative. We apply a Chi-square test and multivariate logistic regression to examine the relationship between the selected explanatory variables and consistent condom use. As we found gender differences in consistent condom use among the participants, we stratified our analysis accordingly and conducted logistic regression for males and females differently. The logistic regression results are presented as odds ratios (ORs) with 95 % confidence intervals (CIs). Statistical significance was defined as a two-tailed p-value < 0.05 in all analyses.

Results

Demographic characteristics of the sample

The socio-demographic characteristics of the participants are presented in Table 1. Females (75.5%) constitute the majority of the participants in the study, and over 66% of the participants were in the age range 20–24. Approximately half of the participants lived in rural settings (50.4%) and were employed (59.3%). Over a third of the participants (37.1%) had tested for HIV, and approximately three out of four participants (74.7%) had at least secondary education. Radio (54.6%) and television (49.1%) were the main sources of information for family planning, and over 80% of the participants self-identified themselves as Christians. About 39% of the participants considered themselves rich, while approximately 36% self-identified themselves as poor. Approximately 11% of the respondents reported consistent condom use in their previous sexual activity.

Bivariate analysis of consistent condom use with socio-demographic characteristics

Bivariate findings are presented in Table 2. Generally, the majority of the variables showed significant bivariate associations with consistent condom use. However, among the socio-demographic variables, gender (χ^2 122.6, $p < 0.001$), place of residence ($\chi^2 = 10.4$, $p < 0.001$), education level ($\chi^2 = 44.3$, $p < 0.001$) and wealth status ($\chi^2 = 20.1$, $p < 0.001$) were strongly associated with consistent condom use. Specifically, females were more likely than males to report consistent condom use. Those who lived in urban areas were also more likely to report consistent condom use than those living in rural areas. In terms of education, those with at least secondary education were more likely to report consistent condom use than those with primary education and those without education. Participants in the rich wealth category were more likely to report consistent condom use than those with average and poor wealth. All three sources of family planning information – radio ($\chi^2 = 4.3, p = 0.038$), television ($\chi^2 = 6.7, p = 0.01$) and print media ($\chi^2 = 10.1$, $p < 0.001$) – were associated with consistent condom use. Similarly, participants who had not tested for HIV were more likely to have used a condom consistently ($\chi^2 = 55.4$, $p < 0.001$). Finally, region was associated with condom use ($\chi^2 = 27.3, p < 0.001$).

Multivariable analyses of consistent condom use with socio-demographic characteristics

The results of the logistic regression presented in Table 3 are stratified by gender. For females, those who had not tested for HIV had reduced odds of using a condom consistently (OR = 0.38, 95% CI: 0.25–0.59; $p < 0.001$). On the contrary, those who obtained family planning information through print media (OR = 3.01, 95% CI: 1.63–5.56; $p < 0.001$) and from the two northern regions, Upper East (OR = 2.80, 95% CI: 1.14–6.90; $p < 0.05$) and Upper West (OR = 3.38, 95% CI: 1.32–8.63; $p < 0.05$) were uniquely associated with increased odds of consistent condom use. For males, affiliation with the Traditional African religion (OR = 0.22, 95% CI: 0.05–0.89; $p < 0.05$) was associated with reduced odds of using a condom consistently, but the rich wealth category (OR = 2.47, 95% CI: 1.23–4.95; $p < 0.05$) was associated with increased odds of consistent condom use.

Discussion

This study explored the prevalence and determinants of consistent condom use among sexually active young adults in Ghana. Our results showed that approximately 11% of the respondents reported consistent condom use in their previous sexual activity. Among the youth that were sexually active, females were more likely than males to have

Table 1. Socio-demographic characteristics of participants.

Characteristics	*Number*	*Weighted percentage (%)*
Consistent condom use		
No	2470	88.9
Yes	309	11.1
Gender		
Male	682	24.5
Female	2097	75.5
Age groups		
15–19	920	33.1
20–24	1859	66.9
Place of residence		
Rural	1401	50.4
Urban	1378	49.6
Employment status		
Unemployed	1130	40.7
Employed	1649	59.3
HIV test status		
Untested	1748	62.9
Tested	1031	37.1
Religion		
Christian	2234	80.4
Moslem	407	14.6
Traditional	38	1.4
Others	100	3.6
Education level		
No education	239	8.6
Primary	464	16.7
Secondary or higher	2076	74.7
Wealth status		
Poor	997	35.9
Average	687	24.7
Rich	1095	39.4
Source of family planning information		
Radio	1518	54.6
TV	1365	49.1
Print media	236	8.5
Region		
Western	365	13.1
Central	277	10
Greater Accra	499	17.9
Volta	222	8
Eastern	305	11
Ashanti	457	16.4
Brong Ahafo	288	10.4
Northern	207	7.4
Upper East	99	3.6
Upper West	60	2.2

used a condom consistently. In the final logistic regression, females who had tested for HIV were less likely to use a condom consistently. However, those who had obtained family planning information from print media and those from the northern parts of Ghana were more likely to practise consistent condom use. For males, those who professed the Traditional African religion were less likely to use a condom consistently. In contrast, those in the rich wealth category were more likely to use a condom consistently.

Our consistent condom use prevalence estimate (11%) is low compared to earlier studies on SSA use (25%–40%) (20–24). The conservative Ghanaian culture may explain the low prevalence rate. Young people in Ghana may be hesitant about purchasing a condom since sexuality and condom use issues are rarely discussed. Unlike in the less conservative cultures, condoms are not freely distributed to young adults of school age in Ghana. An earlier study in Ghana has established that although the majority of young adults in institutions of higher education use a condom, only a third indicated that they do this consistently due to issues of trust, non-availability and not liking condoms (24). Also, a recent study revealed that most adolescents had difficulties maintaining a budget for contraceptives, mainly condoms, to prevent unintended pregnancy (25). These factors have been identified within SSA as strong determinants of consistent condom use among young people and adults (8,10,21,23). The use of a single item to measure consistent condom use warrants a cautious interpretation of the reported estimate, as single-item measures may often result in higher estimates. Notwithstanding these plausible explanations, the low prevalence of consistent condom use among the sexually active sample in this study underscores the need for intensive public education on consistent condom use, particularly sexually active young adults.

Our logistic regression results showed that sexually active females who had tested for HIV were less likely to use a condom consistently, but those who had obtained family planning information from print media and those from the northern parts of Ghana were more likely to practice consistent condom use. The negative relationship between consistent condom use and knowledge of HIV status contradicts previous studies indicating that an HIV test encourages protective sexual behaviours among

Table 2. Bivariate analysis of the factors associated with consistent condom use.

Variables	*Consistent condom use*			
	No	*Yes*		
	N (weighted %)	*N (weighted %)*	χ^2	*p-value*
Gender			122.6	< 0.001
Male	504 (20.7)	165 (48.0)		
Female	1931 (79.3)	179 (52.0)		
Age groups			1.9	0.165
15–19	800 (32.9)	126 (36.6)		
20–24	1635 (67.2)	218 (63.4)		
Place of residence			10.4	< 0.001
Rural	1351 (55.5)	159 (46.2)		
Urban	1084 (44.5)	185 (53.8)		
Religion			4.3	0.231
Christian	1870 (76.8)	257 (74.1)		
Moslem	431 (17.0)	77 (22.4)		
Traditional	43 (1.8)	5 (1.5)		
Others	91 (3.7)	5 (1.5)		
Education level			44.3	< 0.001
No education	279 (11.5)	7 (2.0)		
Primary	467 (19.2)	43 (12.5)		
Secondary/higher	1689 (69.4)	294 (85.5)		
Employment status			0.06	0.812
Unemployed	1017 (41.8)	146 (42.4)		
Employed	1418 (58.2)	198 (56.6)		
Wealth status			20.1	< 0.001
Poor	1126 (46.2)	127 (36.9)		
Average	585 (24.0)	78 (22.7)		
Rich	724 (29.7)	139 (40.4)		
HIV test status			55.4	< 0.001
Untested	1474 (60.5)	269 (78.2)		
Tested	961 (39.5)	75 (21.8)		
Source of family planning information				
Radio (= 1)	1263 (51.9)	199 (57.9)	4.3	0.038
TV (= 1)	1031 (42.3)	171 (49.7)	6.7	0.010
Print media (= 1)	177 (7.3)	42 (12.2)	10.1	< 0.001
Region				
Western	315 (12.9)	40 (11.6)	27.3	< 0.001
Central	233 (9.6)	43 (12.5)		
Greater Accra	231 (9.5)	34 (9.9)		
Volta	204 (8.4)	26 (7.6)		
Eastern	270 (11.1)	40 (11.6)		
Ashanti	247 (10.1)	20 (5.8)		
Brong Ahafo	321 (13.2)	39 (11.3)		
Northern	240 (9.9)	21 (6.1)		
Upper East	215 (8.8)	44 (12.8)		
Upper West	159 (6.5)	37 (10.8)		

Table 3. Multivariate logistic regression of the predictors of consistent condom use.

	All (N = 2779)	*Female (N = 2080)*	*Male (N = 669)*
	OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Female	0.29 [0.20–0.41]***		
Age groups			
15–19	0.78 [0.57–1.06]	0.77 [0.50–1.19]	0.85 [0.50–1.42]
20–24	1	1	1
Place of residence			
Rural	1	1	1
Urban	1.02 [0.63–1.65]	1.08 [0.68–1.73]	0.89 [0.44–1.78]
Employment status			
Unemployed	1	1	1
Employed	0.96 [0.71–1.29]	0.86 [0.58–1.27]	1.25 [0.76–2.05]
HIV test status			
Untested	1	1	1
Tested	0.52 [0.37–0.73]***	0.38 [0.25–0.59]***	0.95 [0.54–1.69]
Religion			
Others	1	1	1
Christian	1.10 [0.70–1.73]	1.47 [0.87–2.50]	0.92 [0.47–1.80]
Moslem	0.62 [0.22–1.75]	1.00 [1.00–1.00]	0.88 [0.23–3.36]
Traditional	0.25 [0.08–0.78]*	0.44 [0.06–3.35]	0.22 [0.05–0.89]*
Education level			
No education	1	1	1
Primary	2.36 [0.87–6.41]	1.48 [0.47–4.63]	6.74 [0.93–49.07]
Secondary or higher	2.76 [1.04–7.31]*	2.16 [0.69–6.69]	5.98 [0.85–41.89]
Wealth			
Poor	1	1	1
Average	0.99 [0.59–1.66]	0.86 [0.44–1.68]	1.26 [0.63–2.55]
Rich	1.57 [0.94–2.61]	1.18 [0.60–2.32]	2.47 [1.23–4.95]*
Source of family planning information			
Radio	1.23 [0.87–1.73]	1.24 [0.79–1.94]	1.29 [0.76–2.20]
TV	0.95 [0.65–1.38]	0.85 [0.52–1.38]	1.09 [0.62–1.89]
Print media	1.32 [0.85–2.06]	3.01 [1.63–5.56]***	0.65 [0.32–1.31]
Region			
Greater Accra	1	1	1
Western	1.06 [0.55–2.04]	1.91 [0.93–3.91]	0.48 [0.18–1.27]
Central	1.35 [0.69–2.65]	1.84 [0.85–3.98]	1.47 [0.53–4.04]
Volta	1.07 [0.53–2.17]	1.54 [0.68–3.52]	0.68 [0.21–2.24]
Eastern	1.13 [0.58–2.18]	1.25 [0.56–2.76]	1.19 [0.49–2.89]
Ashanti	0.46 [0.21–1.00]	0.57 [0.19–1.75]	0.41 [0.13–1.22]
Brong Ahafo	0.94 [0.50–1.80]	1.44 [0.69–2.98]	0.72 [0.31–1.66]
Northern	0.91 [0.35–2.36]	0.31 [0.08–1.16]	2.21 [0.64–7.60]
Upper East	2.54 [1.25–5.16]**	2.80 [1.14–6.90]*	2.53 [0.99–6.47]
Upper West	2.04 [0.95–4.34]	3.38 [1.32–8.63]*	1.20 [0.43–3.32]

OR = odds ration; CI = confidence interval.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

the general population (8,26). Our plausible explanation for this relationship is that knowing one's HIV status may create a false sense of invincibility that allows one to engage in high-risk behaviours, including non-consistent condom use. Young people generally believe that consistent condom use reduces sexual pleasure; therefore, their desire for maximum fun from any sexual intercourse overrides the need to prevent STIs, including HIV.

Receiving family planning information from print media was associated with increased odds of consistent condom use. This finding is consistent with other studies conducted within SSA where exposure to family planning information is associated with contraceptive use, including condom use (27–31). This finding is encouraging and calls for governmental agency to increase the discussion of family planning issues in various media, especially through the radio. We also observed in this study that female sexually active young adults from the northern parts of Ghana were more likely to practice consistent condom use. These findings are encouraging as condom use in some regions in northern Ghana is influenced by misconceptions. Notably, those who use contraceptives, including condoms, are stigmatised and ridiculed as promiscuous (32). Consistent condom use among female young adults confirms a current study that found condom use to be the most popular contraceptive method among young women in northern Ghana (33). It is also plausible that these young females may not want to be pregnant to continue their education, although sexually active. This change in attitude towards condom use in northern Ghana may partly be as a result of the ongoing numerous intervention programmes on sexual and reproductive health in these parts of the country (34).

We also found that males who professed the Traditional African religion were less likely to use a condom consistently. Conversely, males in the rich wealth category were more likely to use a condom consistently. Religion is one key social and cultural factor (35) with a pervasive influence on the norms, values, structures and institutions that have a profound impact on individuals' behaviours and decisions (36). For participants who professed the Traditional African religion, the consistent non-use of a condom could be attributable to their norms and show of sexual prowess. It is also possible that the lack of consistent condom use among young males professing the Traditional African religion could be the result of masculine validation of the fulfilment of cultural norms and beliefs. Only a few studies have explored the relationship between financial resources/wealth and consistent condom use. The finding that wealth increases the odds of consistent condom use is not surprising because people with sufficient resources can ensure the constant purchase and use of condoms. These findings underscore the need for the Ministries of Education and Health of Ghana to collaborate to ensure that affordable condoms are made available and distributed to young adults across the country. This strategy will ensure that access to condoms (and their subsequent use) may be available to youth irrespective of their socio-economic status.

Limitations of the study

The findings of this research should be interpreted cautiously due to the following limitations. First, the cross-sectional nature of the data weakens the evidence of causal relationships among the study variables. Second, the study relied on self-report measures, which could be affected by social desirability or memory bias. In the Ghanaian context, where sexual communication and education are scarcely discussed, it is possible that the responses to the consistent condom use variable could have been overestimated due to social desirability bias. Finally, we found that several variables such as low self-efficacy with regard to condom use, condom use fatigue and low personal risk of STIs [8,10], which are known to influence consistent condom use, were not explored in this study. It is therefore recommended that future studies address these limitations to help provide a better understanding of the factors that influence consistent condom use among adolescents and young adults who are sexually active. A qualitative research approach should also be used to explore some possible power dynamics in condom use. Notwithstanding these limitations, our findings are consistent with some previous studies, an indication that our results may apply to other sexually active young adults in Ghana. Additionally, the large sample size provides the study with sufficient power, and the representativeness of the sampling strategy and

the nationwide nature of the data boost the study's generalisability to other settings.

Conclusion

Using the 2014 GDHS, this study explored the determinants of consistent condom use among sexually active young adults in Ghana. Approximately 11% of the respondents reported consistent condom use in their previous sexual activity. Females are more likely than males to have used a condom consistently. Our findings underscore the need for behavioural change campaigns targeting young adults, particularly those who are sexually active. These interventions should target young adults who have less knowledge about family planning, know their HIV status and who profess the Traditional African religion. Additionally, HIV testing should be encouraged and be accompanied by other measures such as pre- and post-test counselling geared towards appropriate sex education.

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A health promoting sports club framework: strategies from the field

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Abstract: The application of the settings-based approach to sports clubs requires a context-specific framework to develop and operationalize health promotion interventions. Incorporating top-down and bottom-up perspectives into interventions increases their efficiency, success and sustainability. In 2020, the health promoting sports club (HPSC) model and intervention framework were created, including strategies and intervention components. A subsequent concept mapping study generated 35 statements from sports club stakeholders highlighting their needs when developing health promotion initiatives. This commentary integrates the concept mapping results into the HPSC model and intervention framework. The process added new sports club levels, updated existing and developed new intervention components, then classified them into the framework. The revised HPSC model has seven levels while the revised intervention framework includes 13 strategies and 69 intervention components. This revised HPSC framework provides sports club stakeholders, public health experts and researchers a means to develop and implement targeted health promotion interventions.

Keywords: health promoting sports clubs, intervention planning framework, settings-based health promotion

Introduction

Settings-based approaches are recognized as a successful way to develop health promotion interventions (1). This approach acknowledges that 'change is not solely focused on individuals and their health problems, but generated in organizations and communities to ensure the development of environments that support population-wide changes in health-related behavior' (1). Sports clubs are promising settings for health promotion as they welcome individuals practising sport and those volunteering in various capacities across diverse life stages and socio-economic status (2). Beyond providing opportunities for physical activity, sports clubs can also be settings to foster and support healthy behaviours such as social integration, healthy eating and health literacy (3). Health promotion interventions within sports clubs are limited, as shown in a literature review that identified only three rigorously tested health promotion interventions in sports organizations (4). Furthermore, a systematic mapping review revealed that the settings-based approach was poorly applied in sports clubs (5). To enhance the implementation and

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evaluation of health promotion interventions in sport settings, the health promoting sports club (HPSC) approach was developed. It includes a model showing internal (Individual, Micro, Meso, Macro) and external (Sports Federations, Second Line Actors) sports club levels with four health determinants: economic, environmental, organizational and social (6). The model highlights how the levels interact to influence the health determinants of stakeholders involved in sports clubs. Further research developed an HPSC intervention framework to aid sports club stakeholders to plan and implement health promotion actions targeting different levels and health determinants within their club. This HPSC framework incorporates 14 broad strategies for intervention development: Communication, Dynamic, Education, Experience, Feasibility, Goals, Mobilization, Monitoring, Motivation, Participative Approach, Partners, Planning, Policies and Resources. Through stakeholder workshops, specific intervention components were identified within each strategy and labelled using the first three or four letters of the strategy they represent and then numbered. For example, the first intervention component in the communication strategy is labelled COM1 and the fifth intervention component in the feasibility strategy is labelled FEAS5. The numbering system has no relation to temporal implementation nor importance to health promotion. Once defined and labelled, intervention components were classified into the sports club level and health determinant that they best target through group consensus (6). The HPSC framework can be used by sports club stakeholders and public health practitioners to develop, plan and implement health promotion interventions specific to the sports club's goals.

Solely based on evidence-driven strategies, the original HPSC framework needed to be enriched with perspectives directly from sports club stakeholders (e.g. managers and coaches). Therefore, a concept mapping study was undertaken to identify stakeholders' needs when implementing health promotion interventions (7). Through this process, stakeholders from sports organizations identified 35 statements that they determined to be both important and feasible in supporting their needs when developing health promotion in sports clubs (7). This commentary outlines how these statements have been integrated into the original HPSC framework to generate a revised HPSC model and intervention framework.

Updating the HPSC model

To update the original HPSC model, previously undefined levels (Individuals, Sports Federations and Second Line Actors) (6) and coordinating health determinants were defined in line with the original HPSC model definitions. To clearly define the Second Line Actors' level, sports club stakeholders suggested splitting it into 'Government Authorities' and 'Public Health Actors'. The updated HPSC model now consists of seven (four internal and three external) sports club levels (Figure 1).

Formulating strategies and intervention components

Statements from the concept mapping study (7) were analysed and then compared with the strategies and intervention components from the original framework (6). In response, two strategies and nine intervention components were modified. The 'Policies' strategy was removed owing to the focus on policy *planning* rather than drafting (6); corresponding intervention components were incorporated into the 'Planning' strategy and relabelled accordingly. While no new strategies emerged, 14 new inter vention components were formulated and labelled, predominantly within the Education, Experience, Mobilization, Participative Approach and Resources strategies (Table 1).

Framework revision

To integrate these new intervention components into the original HPSC framework, a qualitative one-day seminar with French sports federations (2), public health experts (2) and academics (3) was conducted.

The seminar participants classified 45 intervention components into the HPSC model. This included three intervention components created during the original workshops (GLS1, MOB3, MOT3), four intervention components not meeting original consensus (DYN2, EDU3, FEAS4, RES3) and four modified intervention components requiring reconsideration (COM3–5 and MON5) (6). Additionally, 14 intervention components from the concept mapping study were integrated (EDU4–5, EXP5–7, MOB4–6, PAP6, RES4–8). Finally, 20 intervention components originally classified into the undefined levels were re-classified into the updated

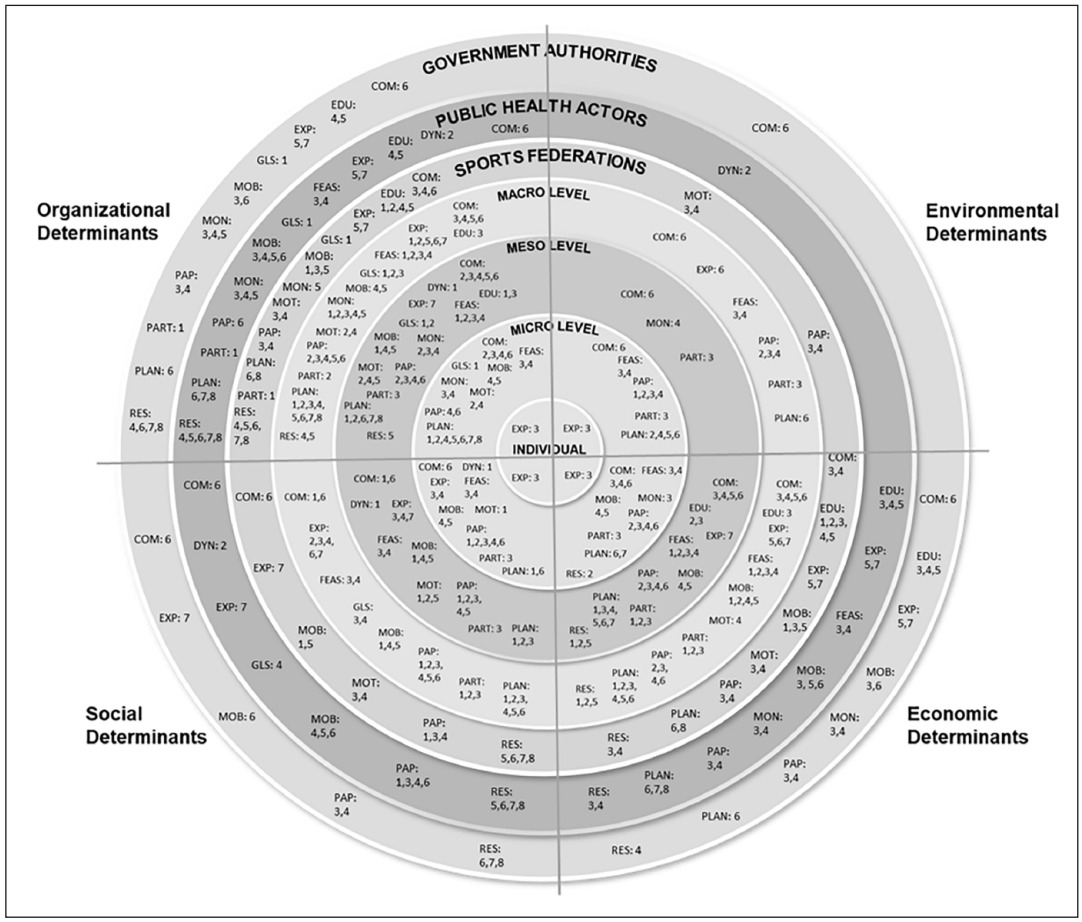

Figure 1. The updated health promoting sports club framework.
COM: communication; DYN: dynamic; EDU: education; EXP: experience; FEAS: feasibility; GLS: goals; MOB: mobilization; MON: monitoring; MOT: motivation; PAP: participative approach; PART: partners; PLAN: planning; RES: resources
Table 1 details the strategies and intervention components.

levels (EDU1–2, EXP3, DYN2, FEAS3, GLS4, MOB1, MON3–4, MOT3–4, PAP1,3–5, PART1, PLAN6–8, RES3) (Supplemental material File 1 online). This updated HPSC intervention framework now includes 13 strategies with 69 intervention components derived from combining the outcomes of top-down and bottom-up approaches (Figure 1).

Implications for the HPSC framework

When creating health promotion interventions, a participative approach is critical, as it combines stakeholder needs and experiences with scientific evidence to add credibility, feasibility and applicability (3). The revised HPSC model now represents all potential levels impacting sports club stakeholders and provides an improved definition of external actors' investment and leverage for sports clubs. The additional intervention components included in the updated HPSC framework offer sports clubs more options for advocating and seeking external support when planning health promotion interventions. Previous research supported the inclusion of a Sports Federation and

Table 1. Health promoting sports club strategies and intervention components.

Communication: develop and implement communication to raise awareness of the actions taken to promote health within the sports club	
COM1	Develop a communication plan
COM2	Communicate with one message, a slogan (clear, explicit and visible)
COM3	Ensure internal club communication
COM4	Ensure the club communicates with the external community
COM5	Ensure the club communicates with all partners
COM6[a,b]	*Communicate the benefits* of health promotion activities
Dynamic: create strategies to improve all stakeholders' sense of belonging to the club and take into account the individual and their environment (socio-ecological approach) in order to define the most relevant health promotion goals	
DYN1	Take the feeling of belonging to the club into account when defining the goals
DYN2	Take into account interactions between the individual and their environment, while defining health promotion goals
Education: support *the sports club*, *management* and coaches by varying the type of education they receive and take into account *differences in* the sports participants they coach	
EDU1	Support the *managers and* coaches to actively engage in gaining knowledge and skills to promote health
EDU2	Tailor the support to the *managers and* coaches individually in relation to the sports participants they coach (mentoring, courses, online tools)
EDU3	Encourage the *managers and* coaches to support each other to promote health
EDU4[b]	Propose a variety of ways for the sports clubs to raise awareness about health promotion
EDU5[b]	Create tools and training courses to support health promotion in sports clubs
Experience: identify past club experiences, organizational readiness and the reasons and quality of the club's commitment to promote health	
EXP1	Identify previous club experiences to promote health
EXP2	Identify the organizational readiness to promote health
EXP3	Identify reasons for commitment to promote health
EXP4	Identify *the degree of* commitment to promote health
EXP5[b]	Rely on existing, evidence-based health promotion tools
EXP6[b]	Rely on a diagnosis to assess needs and expectations in order to implement health promotion actions
EXP7[b]	Rely on other clubs' experiences when developing health promotion actions
Feasibility: regularly review the capacity of the sports club to achieve its health promotion goals	
FEAS1	Regularly review the financial resources being used
FEAS2	Regularly review the human resources being used
FEAS3	Regularly review the club's capacity to undertake the actions required to achieve the goals
FEAS4	Regularly review the time dedicated to achieving the goals
Goals: write down the sports club's health promotion goals, using positive messages, adapted to sports language, culture and the placement of health promotion within the club, taking into account the social inequalities of health	
GLS1	Define the goals of health promotion
GLS2	Health promotion goals are formally written and documented
GLS3	Write goals in a positive sporting language based on the club's culture
GLS4	Take into account inclusivity (i.e. how people experience health differently) when defining the goals
Mobilization: mobilize people to manage the development of health promotion	
MOB1	Mobilize *sports* champions *to support the development of health promotion within your club*

(Continued)

Table 1. (Continued)

MOB2	Mobilize experts in health promotion
MOB3	Identify and mobilize one or several internal health promotion representatives
MOB4[b]	Mobilize parents (and other family members) to support health promotion actions
MOB5[b]	Mobilize local decision-makers and elected officials to promote health within the sports club
MOB6	Advocate with sports federations to support the clubs on health promotion actions
Monitoring: monitor health promotion activities in daily practice using a 'small steps' philosophy and review any changes	
MON1	Review small improvements towards achieving health promotion goals
MON2	Review all the health promotion activities undertaken in the club
MON3	Review the short term effects of the actions (changes within one sports season)
MON4	Review the long term effects of the actions (changes beyond one sports season)
MON5	Review the health promotion policies of the sport clubs
Motivation: understand what motivates coaches to implement health promotion and empower them in this undertaking	
MOT1	Foster positive interpersonal relationships
MOT2	Take coaches' skills to manage situations into account
MOT3	Take coaches' motivation for coaching and their future expectations into account
MOT4	Strengthen coaches' autonomy to promote health
MOT5	Strengthen coaches' sense of ownership of the club
Participative approach: value a 'participative approach' to promote health throughout the club and beyond	
PAP1	Identify and call attention to health promotion actions of individuals
PAP2	Identify and call attention to coaches' health promotion actions
PAP3	Identify and call attention to management health promotion actions
PAP4	Identify and call attention to every health promotion action
PAP5	Include the managers, coaches and sports participants in the decision making process
PAP6[b]	Involve parents (and other family members and friends) in health promotion efforts
Partners: partner with other organizations to create a common culture and collaborative process to promote health	
PART1	Identify partners for health promotion (clubs, agencies, *regional authorities*, health professionals)
PART2	Define how to collaborate with existing and future partners (define roles, share experiences, contract terms, evaluation of results, equal partner power)
PART3	Create a common culture with existing and future partners (trust, recognition, shared time)
Planning: create an implementation plan to achieve the written health promotion goals	
PLAN1	Include the core goals in the plan
PLAN2	Include the target population in the implementation plan
PLAN3	Include the funding sources in the implementation plan
PLAN4	Include the responsible persons in the implementation plan
PLAN5	Include key steps in the implementation plan
PLAN6	Encourage sustainable health promotion actions
PLAN7[a]	*Base* future *plans* and policies on *current health promotion actions*
PLAN8[a]	Plan future actions based on the evaluation of current actions
Resources: identify, *develop or review* financial, human, *material* and capacity building resources available to invest in health promotion	
RES1	Review available financial resources (subsidies, sponsors) to invest in health promotion
RES2	Review available human resources (dedicated volunteer time, staff turnover) to invest in health promotion
RES3	Review current skills and knowledge available to promote health
RES4[b]	Identify and mobilize tools for health promotion development within sports clubs

(Continued)

Table 1. (Continued)

RES5[b]	Identify the funding that can be used for health promotion actions
RES6[b]	Establish a national resource site for health promotion within sports clubs
RES7[b]	Establish a national spokesperson for health promotion within sports clubs
RES8[b]	Create and host a regional and local network of health promotion mentors within sports clubs (share practices)

Table modified from Van Hoye *et al*. (6).
Italics represent changes to original strategies or intervention components.
[a]Intervention components which were moved from another strategy, modified and renamed.
[b]New intervention components.

Governmental Authorities level by demonstrating that support from sport federations and state sporting organizations can influence members' perceptions of health promotion within their club, as well as assisting sports clubs to build organizational capacity for health promotion (8), by providing resources such as funding and education. In addition to the external levels, the updated HPSC model defines how individuals are part of and impacted by the sports club, managers and coaches (9). This commentary describes how top-down and bottom-up approaches have been integrated to provide sports clubs with context-specific and evidence-informed strategies for health promotion intervention planning. Integrating evidence and stakeholder perspectives strengthens the applicability of the HPSC model and intervention framework when planning and implementing interventions targeting multiple levels and health determinants in the sports club setting.

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Supplemental material

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Oral histories: lessons we can learn from the past

Claire Wang

Abstract: The COVID-19 pandemic has brought to light the importance of hindsight in response to global health crises. Although globalization has amplified worldwide perspectives, many lessons learned from past outbreaks in Indigenous communities have been overlooked. Oral histories are deeply rooted traditions that have played a significant role in the health practices of Indigenous communities across Canada. These practices can provide valuable insights into past epidemics or casualty events and their short- to long-term impacts. They have shaped responses to COVID-19, with Indigenous communities implementing self-determination efforts, such as community closures, contact tracing, and isolation measures. These traditions have heavily influenced population health practices in other contexts, such as the 1700 Cascadia earthquake, smallpox, and tuberculosis outbreaks. However, challenges remain in facilitating disease data transparency and Indigenous sovereignty. Efforts should be made to promote recognizing and respecting Indigenous knowledge and practices within the broader health system.

Keywords: oral histories, Indigenous health, COVID, outbreaks, community responses

Background

Our globalized world has produced a wealth of shared knowledge and resources, but tackling an epidemic has never been more challenging. Since the COVID-19 pandemic, we have learned lessons and public health practices on a personal, regional, and global continuum. However, hindsight is 2020. Communities affected by a lived history of disease and epidemics may have been better equipped and prepared for a never-before-seen pathogen. Many Indigenous communities have historically relied on oral histories to facilitate the generational passing of information through stories, lessons, and traditional knowledge. Tania Cameron, a member of Niisaachewan First Nations, was not a rookie in the fight against COVID-19 (1). She and a local group of health directors had tailored their first community pandemic plan in 2002 when SARS broke out. Cultural practices of sharing oral history stories of past epidemics or high casualty natural disasters had served as widespread reminders to be cautious against similar events (1,2).

Practices of oral history storytelling have often set the foundation of Indigenous communities by uniting experiences and even events of trauma (3). However, they cannot be discounted as simple storytelling. Over time, these oral histories have been 'peer-reviewed' by other community members, where slight deviations often indicated a personal context concerning the story being told. Previous research had confirmed the validity of this practice. Immune-related alleles directly corroborated oral histories from the Lax Kw'alaams and Metlakatla First Nations, affirming the traumatic impact of smallpox that eradicated almost 60% of their 9000-year-old community at the time of European colonization (4).

Through oral history case studies, the profound impact of significant historical events on Indigenous communities and their ongoing implications for population health practices can be better understood.

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1700 Cascadia earthquake

Oral histories of Quileute and Hoh Indigenous peoples depict the colossal fight between the Thunderbird and Whale – now recognized as the 1700 Cascadia earthquake (5–7). This seismic upheaval largely went undocumented by non-Indigenous communities, and geologists only began to tap into the wealth of information contained within these oral histories in the 1990s (8). It was not until researchers incorporated Japanese tsunami records and geologic evidence from North America that the significance of Indigenous oral history became scientifically validated. Nonetheless, for thousands of years, affected Indigenous communities built a culture of awareness which played a pivotal role in imparting knowledge about earthquake safety to subsequent generations (9).

Smallpox

Smallpox and tuberculosis (TB) case studies offer insight towards how oral histories have influenced population health practices. In the case of smallpox, oral histories have served as reminders to communities of the legacy of colonization and its consequences. In the retelling of events by Old Pierre, a member of the Katzie First Nations, the 1782 smallpox insurgence his great-grandfather witnessed was one of extensive loss (10). In the region of what is now Vancouver Island, there were abandoned villages littered with corpses as people 'crawled away into the woods to die [and others] in their homes' (10). The estimated three-quarters mortality provided by Old Pierre's great-grandfather was likely a conservative measure at the time, taking into account the hypothesized virgin soil effect of smallpox (10,11). The epidemic was so severe that 'only in one house did [Old Pierre's Great Grandfather find] a baby boy, who was vainly sucking at its dead mother's breast'(10). Unlike the European settlers who brought over smallpox to the region, this was a novel disease among Indigenous communities, and their lack of immune adaptation to this disease resulted in widespread mortality (4). These past epidemics, where entire villages were wiped out, serve as reminders of disease lethality.

Tuberculosis

Tuberculosis (TB) was and is a long-term disease of attrition. Similar to smallpox, strains of TB were carried over by European settlers, which wreaked havoc under the conditions of colonization (12). However, unlike smallpox, it has been an ongoing battle bringing about an arsenal of disease expertise among Indigenous populations affected by recurring TB outbreaks. Communities are still grappling with the legacy of colonization – overcrowding, poverty, and minimal infrastructure – all the conditions necessary for high disease spread (1). This now-endemic situation occurs at disproportionate rates, where populations like those in Inuit communities deal with disease rates 296 times that of Canadian-born non-Indigenous populations (13). Métis communities face rates nearly 3.5 times higher, and all First Nations on- or off-reserve at rates 41 times higher than Canadian-born non-Indigenous populations (13). As discussed by Robert Bonspiel, the director of the First Nations Paramedics in Quebec, the ongoing fight against TB has brought over a myriad of knowledge in dealing with contact tracing, isolation and quarantine efforts (1). These familiar practices made dealing with the COVID-19 pandemic novel yet normal for their community.

Towards COVID-19 and beyond

Oral histories of particularly devastating diseases like smallpox and TB have shaped the response against COVID-19. Outside of community-enforced contact tracing, isolation, and quarantine, communities like Heiltsuk, Haida, Ahousaht, Tŝilhqot'in, and Tla-o-qui-aht First Nations in British Columbia (BC) closed their borders to tourists and non-residents (14). 'People before economics' was the statement made by the Nuu-chah-nulth Tribal Council president (14). Self-determination, or in other words, sovereignty in health initiatives within communities, has been found to be critically effective against epidemics (2). These self-determination efforts during COVID-19 included staying connected virtually, setting up trailers for self-isolation, roadblocks, and food delivery services for older adults (1).

More efforts must be made to facilitate disease data transparency and Indigenous sovereignty, so that Indigenous communities have the necessary tools to combat outbreaks and apply their oral histories (15). These challenges were apparent when BC First Nations faced issues enforcing a closed community at the onset of COVID-19 (1). Contact

tracing efforts were also impacted when provincial disease data was not readily available to Indigenous community leaders (15). There had been a long-term province-wide practice of not collecting disaggregated disease data, such as the number of Indigenous or BC First Nations peoples affected by COVID-19. This operation inevitably affects governmental accountability and support for on-reserve communities that are highly affected by disease. Nevertheless, BC First Nations provide an excellent case of how oral histories of past epidemics have set the groundwork to be extra cautious and vigilant. In the first half of 2020, there were only 90 cases among BC First Nations (1). And by August of 2020, BC First Nations reserves had tested positive at rates that were only a quarter that of their general non-Indigenous Canada-wide counterparts (1).

Applications

Oral histories are invaluable and credible sources of information, containing a wealth of knowledge from lessons learned and traditional practices spanning decades and centuries earlier. By harnessing the wealth of knowledge, awareness, and preparedness through oral histories, existing public health efforts can be significantly enhanced. This consideration allows for better-tailored and culturally appropriate interventions, leading to more effective outcomes for all.

These practices can also facilitate unique perspectives on cultural norms and beliefs that influence health behaviors, such as attitudes towards vaccination or traditional healing practices. For example, an oral history project could involve interviewing community-dwelling members about their experiences with disease outbreaks and how they were addressed within their community, shedding light on effective responses and measures for controlling outbreaks. It facilitates mutual understanding and communication through an insider lens, providing a personal context that is essential in public health fields (16,17). Drawing from these insights, oral histories can potentially help mitigate implicit clinical biases and enhance educational programs on cultural sensitivity by improving understandings of people's lived experience.

In many ways, this practice sheds light on upstream determinants of health and helps elucidate why communities respond or are affected in certain ways (16). For instance, many Indigenous communities in Canada are disproportionately affected by the drug epidemic, with mortality rates five times higher than their non-Indigenous counterparts in BC alone (18). By collecting stories and experiences directly from community members – leaders, healers, researchers, policymakers and other key stakeholders – we may collectively gain insights into the social, cultural, and historical factors that shape health outcomes and tailored interventions thereafter.

Conclusion

Oral histories are influential in promoting community cohesion, improving health outcomes, and honoring the self-determination and agency of Indigenous communities. To ensure that these lived experiences and lessons learned are genuinely operationalized on the ground in a culturally sensitive and remunerated manner, it is imperative to prioritize Indigenous voices, knowledge, and perspectives. Integrating oral history into public health efforts would provide valuable knowledge regarding the consequences of disease and the lessons learned from them, working towards efforts addressing health disparities in Indigenous communities and beyond.

Acknowledgements

As a researcher from a non-Indigenous background, I acknowledge that I approach the subject from a distinct perspective and distance. It is crucial to recognize that historical and ongoing struggles faced by Indigenous peoples have shaped their life course experiences in unique ways, which I may not fully comprehend. The unintended consequences of Western institutions appropriating Indigenous knowledge are evident in the erasure of Indigenous voices, cultures, and traditional knowledge systems. This ongoing harm perpetuates colonial legacies and impacts various aspects of public health efforts, where Indigenous communities have historically been marginalized, underserved, or silenced.

By actively engaging in reflexivity, I aim to minimize the impact of my biases and strive for a research approach that respects Indigenous self-determination, acknowledges historical injustices, and upholds principles of cultural humility. This process involves setting the following next steps through and from Indigenous communities, involving them as active partners in action, prioritizing their agency in decision-making processes, and ensuring these are done in a remunerated manner. The role of this commentary is to

set a dialogue for future change in an innately Western public health system. Ultimately, researcher reflexivity serves as a guiding principle to navigate the complexities of research, and foster a more inclusive, respectful, and ethical approach that honors the diverse realities and experiences of all individuals.

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Abstracts

Knowledge about COVID-19 in the general adult population after two years of pandemic

Jennifer Ceñera Fernández, Laura González Esteban, Camino Moure García and José Antonio Cernuda Martínez

Objective: To identify the level of knowledge about COVID-19 that the adult population residing in Gijón (Spain) has after two years of the pandemic.
Methods: We carried out a cross-sectional descriptive study between March 2021 and March 2022. The data was obtained through a telephone questionnaire given to a stratified sample of three basic health areas of Gijón, Spain (Calzada, Zarracina and Parque-Somió). The sample size consisted of 305 people. We used Chi-square analysis to study the relationship between categorical variables and ANOVA to compare the means of the total score by basic health area. We performed logistic regressions to calculate the odds ratios between the dependent variable (having advanced knowledge) and the independent variables (sociodemographic variables). We built a logistic regression model to predict the relationship between having advanced knowledge and the independent variables.
Results: Differences were found in the average level of knowledge score between Parque-Somió and Calzada ($p = 0.000$) and Parque-Somió and Zarracina ($p = 0.045$), with Parque-Somió obtaining a higher average score. An association was observed between the level of knowledge and the variables of medium of information used ($p = 0.018$), age ($p = 0.036$), basic health area ($p = 0.000$), educational level ($p = 0.000$), and previous history of close contact ($p = 0.004$).
Conclusions: The advanced level of knowledge occurs above all in basic health areas with a higher socioeconomic level and a population with a high educational level, between 25 and 45 years old, who has been informed by their environment and who has a previous history of follow-up due to being a close contact.

Keywords: COVID-19, level of knowledge, pandemic. (Global Health Promotion, 2024; 31(1): 111–119)

Socioeconomic factors associated by level of food insecurity in Mexican adults with diabetes mellitus during the COVID-19 pandemic

Liliana Pérez-Peralta, Nancy Reynoso-Noverón, Jesús Martínez-Domínguez and Liliana Juárez-Martínez

The COVID-19 pandemic has been one of the biggest public health challenges globally. It affects the food system, widening inequalities and compromising the right to food and an adequate state of well-being and nutrition, especially among the most vulnerable.
Objectives: Estimate the prevalence of food insecurity and identify the associated socioeconomic factors in Mexican adults with diabetes mellitus, during the COVID-19 pandemic.
Methods: We conducted a cross-sectional study using secondary analysis of data from the 2020 National Health and Nutrition Survey on COVID-19. We studied 1,232 individuals representing 9,569,330 adults with diabetes mellitus. Food insecurity was measured using the Latin American and Caribbean Food Security Scale adapted for Mexico. A binary logistic regression model was performed for each level of food insecurity. We calculated odds ratio and 95% confidence intervals. A value of $p < 0.05$ was statistically significant.
Results: 64.8% of respondents presented food insecurity: 40.7% mild, 14.2% moderate, and 9.9% severe. The factors associated with mild food insecurity were: very low socioeconomic level (MR 2.6), loss of employment of a household member (RM 2.0) and reduction in food expenses (MR 5.0); for moderate insecurity the MR was 7.7, 3.4, and 18.6, and in severe insecurity the MR was 7.1, 3.0, and 46.7, respectively.
Conclusions: COVID-19 has had immediate effects on the food insecurity of the population of Mexican adults with diabetes mellitus. Identifying the associated socioeconomic factors is a priority to carry out public policies that allow resources to be redirected and cover basic needs such as food.

Keywords: COVID-19, diabetes mellitus, health survey, food insecurity, Mexico. (Global Health Promotion, 2024; 31(1): 120–131)

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Le rôle essentiel de la littératie en santé en promotion de la santé, pendant une polycrise

Diane Levin-Zamir

En ces temps de polycrise, le rôle de la promotion de la santé est plus important que jamais pour le pouvoir d'agir des familles, des communautés, des organisations et des sociétés. La polycrise actuelle, comprise comme la convergence d'une pandémie mondiale, de défis économiques, environnementaux et climatiques, de conflits politiques et culturels/géopolitiques, amplifie les complexités auxquelles les personnes sont confrontées dans l'accès, la compréhension, le traitement, l'évaluation, l'application et l'utilisation des informations et des ressources, en particulier dans le domaine de la santé. Les répercussions sociales et économiques d'une polycrise (1) sur différentes populations se traduisent par une augmentation des inégalités en santé. Il n'y a pas de meilleur moment que maintenant pour reconnaître le rôle de la littératie en santé en promotion de la santé comme un instrument d'autonomisation, et ce, à tous les niveaux. Il devient primordial de pouvoir prendre des décisions éclairées concernant les comportements, les mesures de prévention et l'accès aux services de santé. Dans cet éditorial, nous explorons le rôle essentiel de la littératie en santé en promotion de la santé au cours d'une polycrise, en soulignant son importance pour favoriser le pouvoir d'agir des personnes, la résilience communautaire et la capacité à relever les défis uniques posés par les crises qui se chevauchent.

La littératie en santé en tant que déterminant de la santé

Que l'on considère la littératie en santé comme un déterminant social de la santé ou que l'on mette en avant son rôle de médiation des effets des déterminants sociaux de la santé, l'association de la littératie en santé avec la santé et le bien-être est de plus en plus reconnue et appuyée par de nombreuses recherches (2). Des déclarations politiques importantes telles que la Déclaration de Shanghai de l'OMS sur la promotion de la santé pour atteindre les objectifs de développement durable à l'horizon 2030 reconnaissent la littératie en santé comme l'un des trois piliers de la promotion de la santé, les deux autres étant une bonne gouvernance et le rôle des villes et des communautés pour la santé (3). Des enquêtes nationales et internationales menées depuis plus d'une décennie (4) ont mis en évidence l'importance du gradient social quand on parle de littératie en santé, en particulier lorsqu'on aborde les questions socioéconomiques (5). Les actions en matière de littératie en santé en période de polycrise doivent aborder ces disparités, et veiller à ce que l'information et les services pertinents atteignent les populations vulnérables et soient adaptés à leurs besoins spécifiques. Par ailleurs, de nombreuses études ont montré qu'il fallait aussi s'intéresser à la littératie en santé mentale et promouvoir l'utilisation des services de prévention chez les personnes ayant un faible niveau de littératie en santé (6).

La littératie en santé et les crises sanitaires

Dans le contexte de la pandémie de COVID-19, on a bien vu tout de suite le rôle et la contribution de la littératie en santé en promotion de la santé (7) pour soutenir le pouvoir d'agir des personnes, des communautés et des organisations. Pourtant, au début de la crise, on a porté peu d'attention et alloué peu de ressources à la promotion de la santé dans les plans d'action nationaux pour la préparation à la crise sanitaire. Les actions en promotion de la santé en général, et celles plus particulièrement axées sur la littératie en santé, n'étaient souvent pas très visibles

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(8). Au milieu de la complexité des crises qui se chevauchent, la capacité d'agir des personnes et des communautés est cruciale pour prendre des décisions éclairées sur la santé et rechercher les services de santé nécessaires. En temps de crise, les populations les plus vulnérables souffrent souvent plus que les autres, ce qui laisse entendre que la littératie en santé peut jouer un rôle important en tant que vaccin social (9). Souvent une polycrise accroit l'incertitude et l'anxiété. Dans une telle situation, la littératie en santé agit comme un outil d'autonomisation, fournissant aux personnes les compétences nécessaires pour comprendre, évaluer de manière critique et appliquer l'information sur la santé à leur situation propre. Ainsi, la littératie en santé est une ressource pour accroître la résilience et renforcer les mécanismes d'adaptation.

Plaidoyer en faveur de la littératie en santé et action

À la lumière de ces considérations, le plaidoyer en faveur de la littératie en santé est primordial. C'est pourquoi, en révisant la *Déclaration de positionnement de l'UIPES sur la littératie en santé: une perspective pratique pour un monde compétent en matière de santé* de 2018, l'UIPES montre son engagement à promouvoir la littératie en santé à plusieurs niveaux (10), pour atteindre la santé, le bien-être et l'équité.

Cette Déclaration, élaborée par le Groupe de travail mondial de l'UIPES sur la littératie en santé, ratifiée par le Conseil Exécutif de l'UIPES en octobre 2023, a été révisée pour répondre aux nombreuses évolutions mondiales, à commencer par les crises survenues depuis sa première publication en 2018. Il s'agit notamment de la pandémie de COVID-19, des maladies non transmissibles (MNT), du populisme et de la désinformation grandissants dans les médias, des besoins en matière de santé planétaire, de la menace qui plane sur certaines démocraties établies de longue date, des possibilités en matière de politique de santé mondiale, d'un vaste mouvement de développement d'initiatives coordonnées de mesures et de recherche, de la santé numérique et des percées et défis de l'IA (11). La déclaration souligne l'attention accrue accordée aux interventions fondées sur des données probantes, l'intérêt que la littératie en santé suscite auprès des organismes, en particulier dans les systèmes de santé et de l'éducation et parmi les parties prenantes concernées, la collaboration internationale croissante, et plus encore.

Cette Déclaration reflète également un changement de paradigme, où l'on dépasse la littératie individuelle en matière de santé, pour inclure une vision intégratrice de structures collectives et organisationnelles et une approche systémique. Ainsi, la définition de la littératie en santé mise à jour qui est utilisée dans la Déclaration révisée, s'énonce comme suit : « La littératie en santé représente les compétences personnelles et la structure, les ressources et l'engagement des organisations qui permettent aux gens d'accéder, de comprendre, d'évaluer et d'utiliser l'information et les services de manière à promouvoir et à maintenir une bonne santé » (12).

Ainsi, la Déclaration de positionnement de 2023 préconise une approche systémique de la littératie en santé pour certains domaines clés : 1. Littératie en santé et politique de promotion de la santé, avec la reconnaissance des approches systémiques et de la littératie organisationnelle en santé ; 2. Interventions fondées sur des données probantes, incluant la communication en matière de santé ; 3. Promouvoir l'évaluation de la littératie en santé et la recherche, soutenues par les ressources nécessaires ; 4. Renforcement des capacités des ressources humaines, incluant la formation continue et le pouvoir d'agir des parties prenantes, en particulier dans les milieux favorables à la santé et en aidant la société civile à participer activement à son bien-être (13).

Il est à noter que cette Déclaration révisée *de positionnement de l'UIPES sur la littératie en santé* est conçue pour une utilisation pratique et s'aligne avec le plan stratégique de 2021–2026 de l'UIPES et des initiatives de plaidoyer récentes concernant la santé planétaire (14).

Les communautés, les services de soins primaires et les partenaires institutionnels pertinents occupent le devant de la scène, encore plus que par le passé, par le rôle qu'ils jouent dans la coproduction de la santé et du bien-être (15), comme le montre l'article de Kilinç et ses collègues, intitulé « Public health literacy in primary users in Western Turkey » (la littératie en santé publique chez les usagers des services de soins primaires en Turquie occidentale), publié dans ce numéro de *Global Health Promotion*. Leurs résultats montrent qu'en Turquie, il faut donner la priorité à la « littératie en santé publique » afin de relever les défis qui affectent la santé locale et mondiale (16).

Il reste encore de nombreux défis à relever et beaucoup d'autres se rapprochent. Pendant que nous travaillons assidûment à atteindre la littératie en santé numérique, sans laisser personne de côté, n'oublions pas la valeur et la richesse de la sagesse ancestrale, profondément enracinée, qui sous-tend les actions en faveur de la santé et de la promotion de la santé dans tant de cultures (17). Par ailleurs, lorsque nous adoptons l'approche par milieu de vie dans nos interventions en promotion de la santé, nous pouvons conceptualiser une approche coordonnée qui serait un « super milieu de vie », où plusieurs milieux travaillent en synergie les uns avec les autres pour promouvoir la santé et la littératie en santé (18).

Conclusion et perspectives d'avenir

En période de polycrise, la littératie en santé apparaît comme un déterminant essentiel du bienêtre individuel, communautaire et sociétal. Les défis posés par les crises qui se chevauchent exigent une approche globale de la promotion de la santé qui réunit des stratégies de littératie en santé intégrées dans les organisations. En adaptant la communication, en favorisant la littératie en santé numérique, en mobilisant les communautés, en répondant aux problèmes de santé mentale et en s'attaquant aux disparités socio-économiques, les sociétés peuvent bâtir une population résiliente et sensibilisée à la santé, capable de naviguer les complexités d'une polycrise. Alors que la promotion de la santé continue d'évoluer, il est essentiel de reconnaître le rôle et la place de la littératie en santé dans le contexte d'une polycrise pour favoriser une communauté mondiale plus saine, mieux informée et en capacité d'agir.

Comme l'ont mentionné Portela-Pino et ses collègues dans leur article original publié dans ce numéro de *Global Health Promotion intitulé* « Health literacy and pandemic coping in Leisure Time Monitors » (la littératie en santé et la façon de faire face à la pandémie chez les moniteurs d'activités de loisirs) : « la littératie en santé est plus importante que jamais face à ces menaces pour la santé mondiale aux menaces à la santé mondiale qui ont eu une incidence à tous les niveaux du modèle socio-écologique, y compris les comportements individuels en matière de santé, les relations familiales, le comportement des organisations, l'élaboration des politiques publiques, les statistiques sur la mortalité et l'économie internationale, en l'espace de quelques mois, voire de quelques semaines » (19).

En matière de polycrise, peut-être nous dirigeons-nous vers un état de polycrise chronique ; dans ce cas, la recherche, l'action et les politiques en littératie en santé répondront au besoin de tenir compte de cette nouvelle norme. La littératie en santé est l'un des éléments fondamentaux d'une société résiliente qui donne aux personnes, aux partenaires, aux organisations et aux sociétés la capacité d'agir en investissant dans le bien-être et l'équité en santé.

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Résumés

L'association entre la littératie en santé, les connaissances sur la COVID-19 et l'observance des mesures préventives en Turquie

Erdal Ceylan et Ayşegül Koç

En dépit de la vaccination et des diverses politiques de prévention, la pandémie de coronavirus (COVID-19) conserve ses effets négatifs à travers le monde. Les populations doivent donc être informées de manière adéquate et mettre ces connaissances en pratique afin de prendre les précautions nécessaires. Cela peut être réalisé par le biais d'une littératie en santé adéquate. Dans ce contexte, cette étude a été menée afin de déterminer la relation entre la littératie en santé, les connaissances sur la COVID-19 et l'observance des mesures préventives. L'échantillon de cette enquête intersectorielle descriptive en ligne était composé de 1086 personnes. Les données ont été recueillies au moyen d'un questionnaire démographique, de l'échelle européenne de littératie en santé (European Health Literacy Scale), du questionnaire d'évaluation des connaissances sur la COVID-19 (COVID-19 Knowledge Assessment Questionnaire), et du questionnaire d'évaluation de l'observance des mesures de prévention de la COVID-19 (COVID-19 Adherence Assessment Questionnaire). L'indice de littératie en santé des participants avait un score médian de 30,9, et 67,5 % d'entre eux présentaient une littératie en santé inadéquate ou problématique. Le sexe, l'âge, le niveau d'études, la situation maritale, la région de résidence, la situation professionnelle et le statut économique étaient associés à la littératie en santé ($p < 0,05$). Les scores médians de connaissances et d'observance des participants étaient de 40 et de 54, respectivement. Il existait des corrélations positives significatives entre les scores de l'indice de littératie en santé, de connaissances et d'observance ($p < 0,001$). Cette étude a démontré que la littératie en santé, les connaissances sur la COVID-19 et l'observance des mesures étaient associées entre elles. Par conséquent, les stratégies visant à améliorer la littératie en santé peuvent être bénéfiques en termes d'amélioration des connaissances et d'observance élevée des mesures, permettant ainsi d'éradiquer la pandémie de COVID-19, de réduire les affections liées à la COVID-19, et de promouvoir la santé publique.
Mots clés : COVID-19, littératie en santé, connaissances, observance des mesures, prévention des maladies. (Global Health Promotion, 2024; 31(1): 6–14)

La littératie en santé et la façon de faire face à la pandémie chez les moniteurs d'activités de loisirs

Iago Portela-Pino, Millán Brea-Castro, Clara Portela-Pino et Margarita Pino-Juste

Introduction : La littératie en santé nous permet de prendre des décisions appropriées concernant nos soins personnels et d'utiliser les services de santé comme il convient ; elle conditionne donc la santé des personnes.
Objectifs : Le but de cette étude était de décrire le niveau de littératie en santé des moniteurs d'activités de loisirs et l'influence de l'auto-perception de la santé en période de pandémie.
Conception de l'étude : Nous avons utilisé une conception d'étude intersectorielle observationnelle avec un échantillonnage non probabiliste par choix raisonné parmi les moniteurs d'activités de loisirs de la Communauté autonome de Galice (Espagne).
Méthode : À cette fin, nous avons eu recours au questionnaire HLS-EU-Q47 mesurant la littératie en santé ainsi qu'à un questionnaire mesurant la perception de la COVID-19.
Résultats : Les résultats permettent de vérifier que les moniteurs considèrent que la pandémie affecte leur vie quotidienne, qu'il s'agit d'une situation amenée à durer longtemps, et qu'ils sont très inquiets. Le faible niveau de littératie en santé des moniteurs d'activités de loisirs est également confirmé.
Conclusions : Par conséquent, il semble urgent d'évaluer le programme de formation existant et d'inclure des contenus d'éducation pour la santé dans ce programme, étant donné le rôle joué par les moniteurs d'activités de loisirs dans la formation des enfants et des adolescents.
Mots clés : littératie en santé, loisirs, temps libre, COVID-19, promotion de la santé. (Global Health Promotion, 2024; 31(1): 15–24)

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La récupération et la distribution de produits alimentaires comme stratégie systémique pour accroître l'accès à des aliments sains dans les populations confrontées à l'insécurité alimentaire : des enseignements pour la planification post-pandémique

Alina I. Palimaru, Julia I. Caldwell, Deborah A. Cohen, Dipa Shah et Tony Kuo

En utilisant les données issues d'une enquête par interception réalisée auprès de 428 adultes ayant reçu des produits excédentaires gratuits dans cinq centres de distribution ainsi que les données qualitatives issues de 15 entretiens avec le personnel de ces centres, nous avons examiné les éléments facilitateurs (par ex. partenariats communautaires, soutien associatif) et les difficultés (par ex. stockage réfrigéré limité, manque d'infrastructures de transport) de la mise en œuvre d'un programme de récupération et de distribution d'aliments dans le Comté de Los Angeles. Dans l'ensemble, cette intervention dans le système alimentaire est apparue pour répondre à un besoin non satisfait des destinataires, dont 80 % étaient en insécurité alimentaire et 60 % se présentaient au centre plusieurs mois par an ou mensuellement. Pour de nombreux habitants des communautés défavorisées de ce comté, cet effort a fortement contribué à accroître l'accès à des aliments sains avant et pendant la pandémie de COVID-19. Afin de maintenir/d'étendre la portée de ce programme, les autorités locales et les programmes d'aide alimentaire devraient fournir une coordination et une supervision plus importantes, et investir davantage de ressources dans cette infrastructure de récupération et de distribution alimentaire.

Mots clés : récupération alimentaire, distribution alimentaire, insécurité alimentaire, système alimentaire, communautés défavorisées. (Global Health Promotion, 2024; 31(1): 25–35)

La relation entre les connaissances et les attitudes liées à la santé, et les comportements à risque pour la santé chez les étudiants portugais

Regina F. Alves

Les données scientifiques révèlent une prévalence élevée de comportements à risque pour la santé chez les étudiants universitaires. Cela impose donc de créer des programmes pédagogiques destinés à promouvoir de meilleures connaissances en matière de santé. Cependant, les connaissances seules ne sont pas suffisantes pour changer les comportements ; d'autres facteurs devraient être pris en compte, notamment les attitudes par rapport à la santé. L'objectif de cette étude intersectorielle était d'analyser la relation entre les connaissances, les attitudes et les comportements à risque pour la santé chez les étudiants universitaires. Pour cela, un questionnaire auto-administré, validé au préalable, a été soumis à un échantillon de 840 étudiants, stratifié par année d'étude (étudiants en première et troisième année) et par domaine scientifique. Outre des questions sociodémographiques, ce questionnaire contenait une échelle des connaissances liées à la santé, une échelle des attitudes par rapport à la santé, et des questions sur les comportements à risque pour la santé. Les étudiants ont montré de mauvaises connaissances en matière de santé, avec des réponses correctes à 17,77 questions (ET = 4,59) sur un total de 36, et ont obtenu des scores modérés concernant les attitudes par rapport à la santé (M = 2,61, ET = 0,48, fourchette : de 1 à 5). Les étudiants ont rapporté s'adonner à, en moyenne, 3,88 (ET = 1,45) comportements sur les sept concernés par l'analyse. Les analyses de médiation ont indiqué que les connaissances en matière de santé et les attitudes par rapport à la santé étaient des indicateurs prédictifs statistiquement significatifs des comportements à risque. Il a en outre été montré que les attitudes par rapport à la santé avaient un effet médiateur entre les connaissances en santé et les comportements à risque pour la santé.

Les résultats de cette étude indiquent que les politiques d'éducation et de santé publique devraient promouvoir des comportements favorables à la santé auprès des étudiants, en tenant compte, non seulement du niveau

des connaissances, mais principalement du développement d'attitudes positives face à des comportements qui mettent la santé en danger.
Mots clés : comportement à risque pour la santé, connaissance des risques pour la santé, attitudes par rapport à la santé, enseignement supérieur, éducation pour la santé. (Global Health Promotion, 2024; 31(1): 36–44)

La littératie en santé publique chez les usagers des services de soins primaires en Turquie occidentale

Ali Kılınç, Cüneyt Çam, Sevil Aydoğan Gedik, Didem Oktar, Umur Taşcıoğlu, Feyza Nehir Öznur Muz, Muhammed Fatih Önsüz et Selma Metintaş

Contexte : La littératie en santé publique (LSP) est une perspective nouvelle de la littératie en santé (LS). Différente de la LS qui a une approche individualiste, la LSP concerne les événements liés à la santé publique et la promotion de la santé dans l'ensemble de la société.
Objectifs : Évaluer la LSP, un concept nouvellement développé, et les facteurs qui y sont liés.
Méthodes : Dans cette étude intersectorielle, des personnes qui se rendaient dans des centres de soins de santé primaires en milieu urbain et rural ont été recrutées pour compléter un questionnaire qui comprenait une échelle des connaissances de littératie en santé publique (Public Health Literacy Knowledge Scale, PHLKS) et une échelle de littératie en santé chez l'adulte (Adult Health Literacy Scale, AHLS). Sur les quatre centres de soins de santé primaires sélectionnés de manière aléatoire en Turquie occidentale, un seul était situé en milieu rural, tandis que les trois autres se trouvaient en milieu urbain. Une régression linéaire multiple a été utilisée pour déterminer les éléments prédictifs de la LSP.
Résultats : Le groupe d'étude était composé de 1 672 personnes, dont 55,3 % étaient des hommes. L'âge moyen était de 40,94 ± 15,22. Le score médian (min-max) de l'échelle PHLKS était de 13,0 (0–17). La régression linéaire multiple a montré que le niveau de revenus avait un impact négatif sur la LSP. Cependant, un niveau d'études plus élevé, un goût pour la lecture, une hospitalisation et la LS augmentaient les niveaux de LSP. En outre, le fait de vivre en milieu urbain et le fait de ne pas avoir de problèmes d'audition étaient associés de manière positive à la LSP.
Conclusions : Les participants ont présenté un niveau modéré de LSP. L'amélioration de la LSP devrait être une priorité pour lutter contre les problématiques locales et mondiales ayant un effet néfaste sur la santé communautaire. Afin d'accroître l'engagement communautaire dans les événements de santé publique, les populations présentant de faibles niveaux d'études et de LS devraient être ciblées dans les programmes de formation à l'avenir.
Mots clés : littératie en santé publique, littératie en santé, soins de santé primaires, promotion de la santé. (Global Health Promotion, 2024; 31(1): 45–54)

La recherche d'aide en santé mentale au Mexique

Robin E. Gearing, Kathryne B. Brewer, Micki Washburn, Miao Yu, Pedro Isnardo de la Cruz, Adelaide Garcia Andres et Luis R. Torres

Au Mexique, la plupart des personnes qui nécessiteraient de recourir à des services de santé mentale ne recherchent pas de soutien formel ou de services professionnels pour répondre à leurs besoins en santé mentale. Il est essentiel de comprendre les comportements relatifs à la recherche d'aide afin d'aborder la sous-utilisation des services de santé mentale et de maximiser les efforts de promotion de la santé.
Des données ont été recueillies dans le cadre d'un projet de recherche plus large sur la stigmatisation et la recherche d'aide pour des préoccupations liées à la santé mentale au Mexique. Un échantillon de commodité composé de 469 adultes résidant à Mexico a participé à l'étude pour laquelle on a utilisé une méthodologie expérimentale par vignettes afin d'évaluer la stigmatisation des individus atteints d'affections de santé

mentale ainsi que les caractéristiques et les corrélats démographiques de la recherche d'aide. Toutes les mesures de l'enquête ont été administrées en espagnol. Une régression structurelle a été menée pour le résultat « ouverture à la recherche d'aide professionnelle pour des problèmes de santé mentale » comme variable latente. Comparativement aux hommes, les femmes étaient plus ouvertes à la recherche d'aide professionnelle ($b = 0{,}09$, $p = 0{,}038$), ce qui était aussi le cas des personnes adhérant à une spiritualité plus élevée ($b = 0{,}01$, $p = 0{,}006$) ; en revanche, les personnes qui souffraient d'auto-stigmatisation étaient moins ouvertes à la recherche d'aide professionnelle pour des préoccupations de santé mentale ($b = -0{,}15$, $p = 0{,}005$). L'auto-stigmatisation était un déterminant majeur de la faible utilisation des services. Contrairement aux études antérieures, la spiritualité était un élément prédictif positif et significatif de la recherche d'aide professionnelle. Une compréhension plus nuancée de la recherche d'aide en santé mentale au Mexique pourrait être utile pour des efforts de sensibilisation destinés à accroître l'utilisation des services à la fois au Mexique et chez les Latino-Américains présents aux États-Unis. Compte tenu des liens historiques, géographiques et culturels de ce pays avec les États-Unis, il est important de comprendre la recherche d'aide en santé mentale au Mexique, car elle pourrait être directement liée aux comportements de recherche d'aide chez de nombreux Latino-Américains ayant émigré aux États-Unis.

Les orientations pour la recherche future et les implications pratiques sont discutées, y compris une feuille de route pour les activités de promotion de la santé.

Mots clés : Latino-Américains, Hispaniques, recherche d'aide, santé mentale, utilisation des services, stigmatisation, Mexique. (Global Health Promotion, 2024; 31(1): 55–64)

Explorer le rôle des organisations communautaires de santé dans la promotion de la santé publique en période de crise sanitaire : une étude qualitative sur les réponses apportées à la COVID-19 en Afrique du Sud et en Zambie

Jamie Sewan Johnston, Kelly Zhang Aluri, Nophiwe Job, Kira-Leigh Kuhnert, Charles Prober, Victoria Ward et Nadine Ann Skinner

Tandis que la pandémie de COVID-19 accroissait le besoin d'informations exactes et exploitables, l'incertitude et le foisonnement d'informations erronées ont contribué à une méfiance significative à l'égard des messages de santé, en particulier dans les communautés marginalisées. Les organisations communautaires de santé peuvent jouer un rôle important en suscitant la confiance et en fournissant des informations de santé ciblées aux groupes vulnérables. Cette étude qualitative, axée sur des organisations communautaires de santé soutenant les populations vulnérables en Afrique du Sud et en Zambie, a trouvé que durant la pandémie, les organisations communautaires de santé ont étendu leur rôle et ont mis à profit l'accès et la confiance dont elles bénéficiaient pour soutenir les communautés qu'elles desservaient en leur fournissant des services et une éducation pour la santé. Cependant, le fait de dépendre de soutiens externes limite les capacités des organisations à apporter des réponses efficaces et efficientes en période de crise sanitaire.

Mots clés : COVID-19, organisations communautaires de santé, éducation pour la santé, informations de santé. (Global Health Promotion, 2024; 31(1): 65–74)

L'utilisation systématique du préservatif chez les jeunes adultes sexuellement actifs au Ghana : une analyse de sa prévalence et des facteurs qui y sont associés

Kwaku Oppong Asante, Samuel Ampaw et Sylvia Esther Gyan

L'utilisation systématique et correcte du préservatif offre un moyen sûr, économique et efficace sur le plan pratique de prévenir l'infection par le VIH. En utilisant l'enquête ghanéenne sur la démographie et la santé de 2014 avec un échantillon de 2 779 jeunes sexuellement actifs (hommes = 682 et femmes = 2 097) dans la tranche d'âge des 15–24 ans, cette étude a examiné la prévalence de l'utilisation systématique du préservatif

et les facteurs qui y sont associés parmi les jeunes adultes sexuellement actifs au Ghana. Une régression logistique multivariée a été utilisée pour analyser les données.
Nos résultats ont montré qu'environ 11 % des répondants ont rapporté une utilisation systématique du préservatif concernant leur activité sexuelle antérieure. Les femmes étaient plus susceptibles que les hommes d'avoir utilisé le préservatif de manière systématique.
Les résultats de la régression logistique ont montré que les femmes qui s'étaient faites dépister pour le VIH étaient moins susceptibles d'utiliser le préservatif de manière systématique. Cependant, celles qui avaient eu accès à des informations sur la planification familiale par le biais de sources d'informations imprimées et celles de la partie septentrionale du Ghana étaient plus susceptibles de recourir systématiquement à l'utilisation du préservatif. En outre, les hommes qui pratiquaient la religion africaine traditionnelle étaient moins susceptibles d'utiliser le préservatif de manière systématique. En revanche, les hommes appartenant à la catégorie sociale aisée étaient plus susceptibles de recourir systématiquement au préservatif. Ces résultats soulignent le besoin de campagnes pour le changement comportemental ciblant les jeunes adultes, en particulier ceux qui sont sexuellement actifs, de manière à encourager l'utilisation systématique du préservatif. Ces interventions devraient cibler les jeunes adultes ayant moins de connaissances en matière de planification familiale, ceux qui connaissent leur statut VIH, et ceux qui pratiquent la religion africaine traditionnelle.
Mots clés : sexuellement actif, utilisation du préservatif, jeunes adultes, VIH, Ghana. (Global Health Promotion, 2024; 31(1): 75–84)

Un cadre de référence pour les clubs de sport promoteurs de santé : des stratégies issues du terrain

Stacey Johnson, Aurélie Van Hoye, Susanna Geidne, Alex Donaldson, Florence Rostan, Fabienne Lemonnier, Benjamin Tezier et Anne Vuillemin

Appliquer l'approche basée sur les lieux de vie aux clubs de sport nécessite un cadre de référence spécifique à ce contexte pour développer et mettre en œuvre les interventions de promotion de la santé. L'intégration de perspectives descendantes et ascendantes dans les interventions accroît leur efficacité, leur succès et leur durabilité. En 2020, le modèle de club de sport promoteur de santé (CSPS) et le cadre de référence pour ses interventions ont été créés, incluant des stratégies et les composantes des interventions. Par la suite, une étude de cartographie conceptuelle a généré 35 déclarations de la part de parties prenantes de clubs de sport mettant en évidence leurs besoins lors du développement d'initiatives de promotion de la santé. Ce commentaire intègre les résultats de cette cartographie conceptuelle dans le modèle de CSPS et dans le cadre de référence pour ses interventions. Ce processus a ajouté de nouveaux niveaux de clubs de sport, a mis à jour les composantes d'intervention existantes et en a développé de nouvelles, puis les a classifiées dans le cadre de référence. Ce modèle révisé de CSPS possède sept niveaux, tandis que le cadre de référence révisé pour les interventions inclut 13 stratégies et 69 composantes d'intervention. Ce cadre de référence révisé de CSPS fournit aux parties prenantes de clubs de sport, aux experts de la santé publique et aux chercheurs un moyen de développer et de mettre en œuvre des interventions ciblées de promotion de la santé.
Mots clés : clubs de sport promoteurs de santé, cadre de référence pour la planification d'interventions, santé basée sur les lieux de vie. (Global Health Promotion, 2024; 31(1): 85–90)

Les récits oraux : des enseignements que nous pouvons tirer du passé

Claire Wang

La pandémie de COVID-19 a mis en évidence l'importance de prendre du recul lorsqu'il s'agit de répondre à des crises sanitaires mondiales. Bien que la mondialisation ait élargi les perspectives planétaires, de nombreux

enseignements tirés d'épidémies antérieures dans des communautés autochtones ont été négligés. Les récits oraux sont des traditions profondément enracinées qui ont joué un rôle significatif dans les pratiques de santé des communautés autochtones à travers le Canada. Ces pratiques peuvent fournir un aperçu précieux des épidémies passées ou des catastrophes survenues, et de leurs impacts à court et long terme. Elles ont déterminé les réponses apportées à la COVID-19, avec des communautés autochtones mettant en place des efforts d'auto-détermination, tels que les fermetures communautaires, la recherche des contacts, et les mesures d'isolement. Ces traditions ont lourdement influencé les pratiques de santé de la population dans d'autres contextes, tels que le séisme de Cascadia en 1700, et les épidémies de variole et de tuberculose. Cependant, des difficultés subsistent pour faciliter la transparence des données sur la maladie et la souveraineté des Autochtones. Des efforts devraient être déployés pour promouvoir la reconnaissance et le respect des connaissances et des pratiques autochtones au sein du système de santé plus large.
Mots clés : récits oraux, santé autochtone, COVID-19, épidémies, réponses communautaires. (Global Health Promotion, 2024; 31(1): 91–94)

Connaissances acquises par la population générale adulte sur la COVID-19 après deux années de pandémie

Jennifer Ceñera Fernández, Laura González Esteban, Camino Moure García et José Antonio Cernuda Martínez

Objectif : Identifier le niveau de connaissances acquises par la population adulte de Gijón, en Espagne, après deux années de pandémie.
Méthodes : Une étude descriptive transversale a été réalisée entre mars 2021 et mars 2022. Les données ont été obtenues au moyen d'un questionnaire téléphonique portant sur un échantillon stratifié de trois zones de santé de base de Gijón, en Espagne (Calzada, Zarracina et Parque-Somió). La taille de l'échantillon était de 305 personnes. L'analyse chi-carré a été utilisée pour étudier la relation entre les variables qualitatives et ANOVA pour comparer les moyennes du score total par zone de base. Des régressions logistiques ont été effectuées pour calculer les odds ratio entre la variable dépendante (posséder des connaissances avancées) et celles indépendantes (variables sociodémographiques). Un modèle prédictif entre l'existence ou non de connaissances avancées et les variables indépendantes a été construit par régression logistique.
Résultats : Des différences ont été constatées dans la note moyenne du niveau de connaissances entre Parque-Somió et Calzada ($p = 0.000$) et Parque-Somió et Zarracina ($p = 0.045$), la zone de Parque-Somió obtenant une moyenne plus élevée. On a observé une association entre le niveau de connaissances et les variables : moyen d'information utilisé ($p = 0.018$), âge ($p = 0.036$), zone de base de santé ($p = 0.000$), niveau d'éducation ($p = 0.000$) et antécédents de contact étroit ($p = 0.004$).
Conclusions : On trouve un niveau avancé de connaissances surtout dans les zones de santé de base qui ont le plus haut niveau socio-économique, avec une population ayant un niveau d'éducation élevé, âgée entre 25 et 45 ans, informée par son environnement et avec une histoire antérieure de suivi comme contact étroit.
Mots clé : COVID-19, niveau de connaissances, pandémie. (Global Health Promotion, 2024; 31(1): 111–119)

Facteurs socio-économiques associés par niveau d'insécurité alimentaire chez les adultes mexicains atteints de diabète sucré pendant la pandémie de COVID-19

Liliana Pérez-Peralta, Nancy Reynoso-Noverón, Jesús Martínez-Domínguez et Liliana Juárez-Martínez

La pandémie de COVID-19 a été l'un des plus grands défis de santé publique au niveau mondial. Elle affecte le système alimentaire, accroît les inégalités et compromet le droit à l'alimentation et à un état de bien-être et nutritionnel adéquat, en particulier parmi les plus vulnérables.

Objectifs : Estimer la prévalence de l'insécurité alimentaire et identifier les facteurs socio-économiques associés chez les adultes mexicains atteints de diabète sucré, pendant la pandémie de COVID-19.
Méthodes : Étude transversale, analyse secondaire des données de l'Enquête nationale de santé et nutrition 2020 sur les effets de la COVID-19. 1 232 individus représentant 9 569 330 adultes diabétiques ont été étudiés. L'insécurité alimentaire a été mesurée en utilisant l'échelle latino-américaine et caribéenne de sécurité alimentaire adaptée au Mexique. Un modèle de régression logistique binaire a été réalisé pour chaque niveau d'insécurité alimentaire. Le rapport de cotes (RC) et les intervalles de confiance ont été calculés à 95 %. Une valeur $p < 0,05$ était statistiquement significative.
Résultats : 64,8 % des personnes étudiées présentaient une insécurité alimentaire : 40,7 % légère, 14,2 % modérée et 9,9 % sévère. Les facteurs associés à une insécurité alimentaire légère étaient : un niveau socio-économique très bas (RC 2.6), la perte d'emploi d'un membre du foyer (RC 2.0) et la réduction des dépenses alimentaires (RC 5.0) ; pour une insécurité modérée, le RC était de 7.7, 3.4 et 18.6 et pour une insécurité sévère le RC était de 7.1, 3.0 et 46.7, respectivement.
Conclusions : La COVID-19 a eu des effets immédiats sur l'insécurité alimentaire de la population des adultes mexicains atteints de diabète sucré. L'identification des facteurs socio-économiques associés est une priorité pour la mise en œuvre de politiques publiques permettant de rediriger les ressources et de répondre aux besoins essentiels tels que l'alimentation.
Mots-clés : COVID-19, diabète sucré, enquête de santé, insécurité alimentaire, Mexique. (Global Health Promotion, 2024; 31(1): 120–131)

El papel fundamental del alfabetismo para la salud en la promoción de la salud en tiempos de policrisis

Diane Levin-Zamir

En esta época de policrisis, el papel de la promoción de la salud es más importante que nunca para empoderar a las familias, las comunidades, las organizaciones y las sociedades. La policrisis – entendida como la convergencia de una pandemia sanitaria mundial, desafíos económicos, problemas ambientales y climáticos y conflictos políticos, culturales o geopolíticos – amplifica las complejidades que enfrentan las personas para acceder, entender, procesar, evaluar y aplicar/utilizar la información y los recursos, especialmente en el área de la salud.

Los impactos sociales y económicos de una policrisis (1) en diferentes poblaciones generan e incrementan las desigualdades existentes en salud. Este es el mejor momento para reconocer el papel que desempeña el alfabetismo para la salud en todos los niveles de la promoción de la salud como un vehículo para el empoderamiento. La habilidad para tomar decisiones informadas teniendo en cuenta las conductas saludables, las medidas preventivas y el acceso a los servicios de salud, se convierte en algo primordial.

En este editorial exploramos el papel vital del alfabetismo para la salud en la promoción de la salud durante una policrisis, al destacar su importancia para empoderar a las personas, fomentar la resiliencia comunitaria y abordar los desafíos únicos planteados por crisis que se superponen.

El alfabetismo para la salud como un determinante de la salud

Sea un determinante social de la salud o un mediador de los efectos de los determinantes sociales de la salud, y con base en una amplia investigación (2), se reconoce cada vez más al alfabetismo para la salud asociado a la salud y al bienestar. Importantes declaraciones de posición, tales como la de Shanghái de la OMS sobre la promoción de la salud en la Agenda 2030 para el Desarrollo Sostenible, reconocen el alfabetismo para la salud como uno de los tres pilares de la promoción de la salud, junto con la buena gobernanza y el papel de las ciudades y las comunidades en la salud (3). Sondeos nacionales e internacionales realizados durante más de una década (4) han demostrado el gradiente social con relación al alfabetismo para la salud, particularmente en lo que concierne a los temas socioeconómicos (5). Las iniciativas del alfabetismo para la salud en épocas de policrisis deberían enfrentar esas disparidades para asegurar que la información y los servicios fundamentales lleguen a las poblaciones vulnerables y se ajusten a sus necesidades específicas. Adicionalmente, numerosos estudios han revelado que existe la necesidad de abordar el alfabetismo para la salud mental, así como de promover el uso de los servicios de salud preventiva entre las personas con más bajos niveles de alfabetismo para la salud (6).

El alfabetismo para la salud y las crisis sanitarias

En el contexto de la pandemia de la COVID-19, el papel y la contribución del alfabetismo para la salud en la promoción de la salud se hizo evidente bien temprano (7) en el empoderamiento de las personas, las comunidades y las organizaciones. Sin embargo, en las primeras etapas de la crisis, se vio una falta de atención y una escasez en los recursos asignados para las actividades de la promoción de la salud en los planes de acción nacionales de preparación para una crisis sanitaria. La promoción de la salud en general, y más específicamente un énfasis en el alfabetismo para la salud, no fueron a menudo muy evidentes (8).

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En medio de las complejidades de las crisis superpuestas, el empoderamiento es fundamental para que las personas y las comunidades tomen decisiones informadas sobre su salud y busquen los servicios de salud necesarios. En épocas de crisis, las poblaciones más vulnerables sufren con frecuencia más que las otras, lo que lleva a comprender por qué el alfabetismo para la salud puede desempeñar un papel muy importante como vacuna social (9). Muchas veces, una policrisis provoca una mayor incertidumbre y ansiedad. En estas situaciones, el alfabetismo para la salud actúa como una herramienta de empoderamiento al darles a las personas las habilidades para entender, evaluar críticamente y aplicar la información a sus circunstancias particulares. El alfabetismo para la salud es un recurso para incrementar la resiliencia y fortalecer los mecanismos para sobrellevar estas situaciones.

Apoyo y acción para promover el alfabetismo para la salud

Teniendo en cuenta todo lo anterior, es primordial propugnar por el alfabetismo para la salud en la promoción de la salud. Así, al revisar la Declaración de Posición de la UIPES sobre Alfabetismo para la Salud, en el 2018, *Una visión práctica para un mundo alfabetizado en salud*, la UIPES muestra su compromiso para promover el alfabetismo para la salud (10) en diferentes niveles a fin de lograr la salud, el bienestar y la equidad.

Esta Declaración, desarrollada por el Grupo Mundial de Trabajo de la UIPES sobre Alfabetismo para la Salud, ratificada por la Junta Ejecutiva Mundial en octubre del 2023, fue actualizada para responder a los acontecimientos mundiales, como las crisis que han sucedido desde su primera publicación, en 2018. Así, la nueva versión incluye la pandemia de la COVID-19, las Enfermedades no Transmisibles (ENT), el creciente populismo en los medios y la desinformación, las necesidades de la salud planetaria, la amenaza a algunas democracias de vieja data, las oportunidades de las políticas de salud, la expansión internacional de iniciativas coordinadas de medición e investigación, la salud digital y los avances y desafíos que aporta la IA (11). La declaración destaca la mayor atención que se le da ahora a la intervención basada en evidencia, al creciente interés organizacional hacia el alfabetismo para la salud, particularmente en los sistemas de salud y educación que involucran a las partes interesadas más relevantes, y al aumento en la colaboración internacional, entre otros.

El documento refleja, así mismo, un cambio de paradigma natural pasando de un enfoque personal del alfabetismo para la salud hacia uno que incluya las estructuras colectivas y organizacionales en un enfoque sistémico. En la actualización de la Declaración se utiliza la versión más reciente de la definición de alfabetismo para la salud: "El alfabetismo para la salud representa las competencias personales y la estructura organizacional, los recursos y los compromisos que les permiten a las personas acceder, entender, valorar y utilizar la información y los servicios de modo tal que promuevan y conserven la buena salud" (12).

Como tal, la Declaración de Posición del 2023 promueve un enfoque sistémico para la acción del alfabetismo para la salud en varias áreas concretas: 1. Alfabetismo para la salud y políticas para la promoción de la salud basados en los enfoques sistémicos y en el alfabetismo para la salud organizacional. 2. Intervenciones basadas en evidencia que incluyan la adaptación de la comunicación en salud. 3. Promover la medición y la investigación del alfabetismo para la salud con el apoyo de los recursos necesarios. 4. Fomentar la capacidad de la fuerza laboral con formaciones y empoderamiento de los grupos de interés, especialmente en los entornos promotores de la salud, así como apoyar a la sociedad civil para que sea participante activa de su bienestar (13).

Hay que anotar que esta versión actualizada de la Declaración de Posición de la UIPES sobre Alfabetismo para la Salud está diseñada para su uso práctico y va en concordancia con el Plan Estratégico de la UIPES 2021–2026, así como con otras iniciativas recientes, entre ellas, la Declaración de Posición sobre Promoción de la salud planetaria y los conocimientos y visión del mundo de los Pueblos Indígenas (14).

Las comunidades, los servicios de atención primaria y los grupos de interés más relevantes de las organizaciones están llegando a un primer plano, aún más que en el pasado, por el papel que desempeñan como generadores de salud y bienestar (15), según se refleja en el artículo original de investigación, publicado en este número de *Global Health Promotion*, escrito por Kilinç y sus colegas,

bajo el título "El alfabetismo para la salud pública entre usuarios primarios del occidente de Turquía". Sus resultados muestran que en Turquía "el alfabetismo para la salud pública" debe ser una prioridad para enfrentar los desafíos que afectan la salud local y mundial (16).

Todavía quedan numerosos retos por enfrentar y muchos otros vienen en camino. Mientras trabajamos con diligencia para lograr un alfabetismo en salud, sin dejar a nadie atrás, no olvidemos el valor y la riqueza de la sabiduría ancestral profundamente arraigada que constituye la base de la acción y la promoción de la salud en muchas culturas (17). Es más, cuando adoptamos los enfoques de entornos para la promoción de la salud, podemos conceptualizar un enfoque coordinado de "superentornos", en el que múltiples contextos trabajan en sinergia entre sí para promover la salud y el alfabetismo para la salud (18).

Conclusión y recomendaciones

En épocas de policrisis, el alfabetismo para la salud surge como un determinante crucial del bienestar individual, comunitario y societal. Los desafíos planteados por las crisis que se superponen requieren de un enfoque integral de la promoción de la salud que contemple las estrategias del alfabetismo para la salud incorporadas dentro de las organizaciones. Mediante la adaptación de la comunicación, la promoción del alfabetismo para la salud digital, la participación de una comunidades, la atención a la salud mental y el planteamiento de acciones para afrontar las disparidades socio económicas, las sociedades pueden construir una población resiliente y alfabetizada para la salud, capaz de navegar en las complejidades de las policrisis. A medida que la promoción de la salud continúa evolucionando, es esencial reconocer y utilizar el alfabetismo para la salud en un contexto de policrisis, con el fin de fomentar una comunidad mundial más saludable, más informada y empoderada.

Como mencionaron Portela-Pino y sus colegas en su artículo original de investigación, también publicado en este número de *Global Health Promotion* titulado "El alfabetismo para la salud y la lucha contra la pandemia en monitores de actividades de tiempo libre", "el alfabetismo para la salud es más importante que nunca de cara a estas amenazas para la salud mundial que han impactado todos los niveles del modelo socioecológico, como las conductas saludables individuales, las relaciones familiares, el comportamiento organizacional, la creación de políticas estatales, las estadísticas de mortalidad y la economía internacional en un lapso de pocos meses e incluso de semanas" (19).

En cuanto a enfrentar una policrisis, probablemente nos dirigimos hacia un estado de policrisis crónica, en cuyo caso, la investigación, la acción y las políticas en alfabetismo para la salud cubrirán la necesidad de adaptarse a esta nueva norma. El alfabetismo para la salud es una de las piezas fundamentales para construir una sociedad resiliente que empodera a las personas, a los grupos de interés, a las organizaciones y a las sociedades mediante la inversión en el bienestar y en la equidad en salud.

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Conocimientos sobre COVID-19 en población general adulta tras dos años de pandemia

Jennifer Ceñera Fernández[1], Laura González Esteban[1], Camino Moure García[1] y José Antonio Cernuda Martínez[2]

Resumen

Objetivo: identificar el nivel de conocimientos sobre la COVID-19 que tiene la población adulta residente en Gijón (España) después de dos años de pandemia.

Métodos: se realizó un estudio descriptivo transversal entre marzo del 2021 y marzo del 2022. Los datos se obtuvieron mediante un cuestionario telefónico sobre una muestra estratificada de tres zonas básicas de salud de Gijón, España (Calzada, Zarracina y Parque-Somió). El tamaño muestral se compuso de 305 personas. Se empleó el análisis ji-cuadrado para estudiar la relación entre variables categóricas y ANOVA para comparar las medias de la puntuación total por zona básica. Se realizaron regresiones logísticas para calcular las *odds ratio* entre la variable dependiente (poseer conocimientos avanzados) y las independientes (variables sociodemográficas). Se construyó un modelo predictivo entre la existencia o no de conocimiento avanzado y las variables independientes mediante regresión logística. **Resultados:** se encontraron diferencias en la puntuación media del nivel de conocimientos entre Parque-Somió y Calzada ($p = 0.000$) y Parque-Somió y Zarracina ($p = 0.045$), obteniendo mayor puntuación media la de Parque-Somió. Se observó una asociación entre el nivel de conocimientos y las variables medio de información utilizado ($p = 0.018$), edad ($p = 0.036$), zona básica de salud ($p = 0.000$), nivel educativo ($p = 0.000$) e historia previa de contacto estrecho ($p = 0.004$).

Conclusiones: el nivel de conocimientos avanzado se presenta sobre todo en las zonas básicas de salud con mayor nivel socioeconómico, población con nivel educativo alto, de 25 a 45 años, que se ha informado por su entorno y con historia previa de seguimiento por ser contacto estrecho.

Palabras clave: Covid-19, nivel de conocimientos, pandemia

Introducción

La COVID-19 es una enfermedad altamente transmisible, con consecuencias que pueden poner en riesgo la vida de las personas, especialmente de aquellas con un sistema inmunológico comprometido o que presentan comorbilidades (1–4). La vacunación contra la COVID-19 es la estrategia esencial para superar la pandemia. Algunos estudios (5–11) han mostrado que, aunque la inmunidad producida por las vacunas disminuye con el tiempo, estas son efectivas para lograr menores tasas de infecciones, de hospitalizaciones y de muertes, así como para evitar que el virus siga reproduciéndose y evolucionando en formas más peligrosas.

Diversos estudios (12–15) han tratado de evaluar el nivel de conocimientos formales o científicos de diferentes poblaciones y el impacto favorable

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de las intervenciones educativas en el nivel de conocimientos y, con ello, la percepción del riesgo. Jia *et al*. (14), en su estudio transversal, evaluaron el nivel de conocimientos que tenían los estudiantes universitarios en China durante el confinamiento tras el inicio de la pandemia, observando que el nivel era bueno. Díaz-Rodríguez *et al*. (15) evaluaron el impacto de una intervención educativa sobre el nivel de conocimientos de la COVID-19 en adultos mayores, tras la cual se apreció un impacto favorable sobre el nivel de conocimientos.

El método de plantear conjeturas y refutarlas desarrollado por Popper (racionalismo crítico) puede ser útil para configurar prácticas pedagógicas interesantes que promuevan el pensamiento crítico y el desarrollo del conocimiento científico en la población general, lo que permitiría alcanzar, en la población general, la participación en la vida social, el crecimiento personal, la autonomía y la libertad (16).

El objetivo de este estudio fue evaluar el nivel de conocimientos formales o científicos sobre la COVID-19 tras dos años de pandemia en las personas residentes en Gijón (España).

Material y métodos

Diseño del estudio y participantes

Se realizó un estudio transversal sobre las 72 159 personas con edades comprendidas entre los 14 y los 64 años usuarias de la red de atención primaria de las zonas básicas de salud V.2 (Calzada), V.10 (Zarracina) y V.11 (Parque-Somió) del área sanitaria V del Principado de Asturias (España). Del total de la población, se extrajo una muestra estratificada por cada centro de salud (C.S.), con un nivel de confianza del 95 %, un error del 4 % y un valor $\pi = 0.5$. Además, se añadió un 20 % adicional para contrarrestar posibles pérdidas. El tamaño muestral, finalmente, se compuso de 305 personas. Posteriormente, mediante muestreo aleatorio estratificado, se contactó con las 305 personas mediante llamada telefónica en los meses de diciembre del 2021 y enero del 2022. Como criterio de exclusión se estableció la dificultad para hablar y comprender el idioma español.

El estudio contó con la aprobación del Comité de Ética de la Investigación del Principado de Asturias (España), con el código 2021.302.

Variables de estudio

Conocimientos sobre COVID-19

Se utilizó un cuestionario *ad hoc* (Anexo 1), al no existir cuestionarios validados. Para la elaboración del cuestionario se utilizaron, como fuentes de información, los documentos disponibles para la ciudadanía publicados en la página web del Ministerio de Sanidad de España (17). El cuestionario constó de 10 preguntas relativas a los signos y a los síntomas de la enfermedad, a su mecanismo de transmisión, a la prevención, a las medidas de aislamiento y al diagnóstico y la vacunación. Estas preguntas eran cerradas, con varias opciones de respuesta y solamente una válida. Se otorgó un punto por cada acierto y cero puntos en caso de error. A partir de 5 o más puntos, se consideraron "conocimientos suficientes" y, además, si contestaba correctamente las preguntas 3, 4 y 6, se consideró que el participante poseía "conocimientos avanzados", puesto que abordaban los aspectos que mayores dudas e incertidumbre suscitaban entre la población atendida por los investigadores en sus centros de trabajo.

Otras variables

Se evaluaron características sociodemográficas, como centro de salud de pertenencia (Calzada/Zarracina/Parque-Somió), sexo (mujer/hombre), edad categorizada (14-24 /25-45 /46-64), nivel máximo de estudios alcanzado (sin estudios/educación básica, bachiller/formación profesional/universitario/postgrado), ser o no contacto estrecho de un caso COVID positivo, haber sido o no diagnosticado de COVID positivo, medio de información más utilizado para obtener información sobre la COVID-19 (televisión/prensa escrita/radio/páginas web de internet/redes sociales/entorno o comunidad).

Análisis estadístico

Se calcularon frecuencias relativas (%) para las variables categóricas y medidas de tendencia central y dispersión (media y desviación estándar, DE) para las cuantitativas.

Para estudiar la relación entre variables categóricas, se empleó la prueba de ji-cuadrado. Para comparar las medias de la puntuación total por

centro de salud, se utilizó el análisis de la variancia (ANOVA). En los resultados estadísticamente significativos se ejecutaron contrastes *a posteriori* mediante comparaciones múltiples con la corrección de Bonferroni. Se aplicó la prueba t de comparación de medias por sexo para cada centro de salud. Se realizaron regresiones logísticas para calcular las *odds ratio* (OR) entre la variable dependiente y las diferentes variables independientes. La variable dependiente fue la existencia o no de conocimientos avanzados sobre la COVID-19 (se consideró un conocimiento avanzado la respuesta correcta a las preguntas 3, 4 y 6, además de una puntuación igual o superior a 5 en el global de conocimientos). Las variables independientes fueron el centro, el sexo, la edad categorizada, el medio mediante el que más se informó sobre la COVID-19 durante la pandemia, si padeció COVID-19 o no y si fue contacto estrecho o no de una persona con COVID-19. Se construyó un modelo predictivo entre la existencia o no de conocimiento avanzado y las variables independientes mediante regresión logística mediante el procedimiento de exclusión secuencial (*backward elimination)*. El poder predictivo del modelo se valoró mediante el área bajo la curva ROC (AUC): se consideró "buen poder predictivo" un valor de AUC entre 0.80 y 0.89, y "excelente poder predictivo" un valor de AUC igual o superior a 0.90. Para detectar colinealidad se aplicó el factor de incremento de la variancia (VIF), aceptándose como adecuados los valores inferiores a 10 en cada variable del modelo finalista. Para valorar la calibración del modelo finalista se aplicó la prueba de Hosmer-Lemeshow. Se consideró un nivel de significación de $p < 0.05$ (excepto para la prueba de Hosmer-Lemeshow, en la que se consideró un nivel de significación de $p < 0.10$) y un índice de confianza del 95 %. Se empleó el programa estadístico Stata v. 15.0 (Stata Corp., College Station).

Resultados

En la Tabla 1 se muestran las características sociodemográficas, de morbilidad y el nivel de conocimientos adquiridos de la muestra de estudio. De las 305 personas que formaron la muestra, 174 (57.05 %) eran mujeres. Del total, 127 (41.64 %) pertenecían a la zona básica de salud de Calzada, 68 (22.30 %) a la zona básica de salud de Zarracina y 110 (36.07 %) a la zona básica de salud de Parque-Somió.

Se observó, de manera generalizada, una mayor proporción de contactos estrechos en la zona básica de salud de Calzada (16.39 %), así como de personas que fueron diagnosticadas de COVID-19 (10.82 %). Las zonas básicas de Zarracina y Parque-Somió tuvieron menor proporción tanto de contactos estrechos (4.92 % y 14.15 % respectivamente) como de casos confirmados (2.95 % y 8.85 % respectivamente).

En cuanto a los resultados del cuestionario, la zona básica de salud de Parque-Somió consiguió una puntuación media de 8.27 puntos (DE = 1.32), mientras que los centros de salud de Zarracina y Calzada obtuvieron puntuaciones medias inferiores (7.85 puntos; DE = 1.21 y 7.82 puntos; DE = 1.26, respectivamente). En la Tabla 2 se indican las puntuaciones medias de conocimiento y las desviaciones estándar estratificadas por sexo y zona básica de salud y por sexo en el conjunto de la población estudiada, así como el resultado de la prueba *t* de medias y su valor *p*. Se compararon las puntuaciones medias entre los tres centros, una vez aplicados los contrastes *a posteriori* de Bonferroni tras la prueba ANOVA, y se observaron diferencias estadísticamente significativas entre las zonas básicas de Parque-Somió y Calzada ($p < 0.000$) y entre las zonas básicas de salud de Parque-Somió y Zarracina ($p = 0.045$).

Se observó una asociación estadísticamente significativa entre un nivel avanzado de conocimientos y las siguientes variables: el medio de información utilizado (ji cuadrado = 13.645; $p = 0.018$), el grupo de edad (ji cuadrado = 6.625; $p = 0.036$), la zona básica de salud a la que pertenecen (ji cuadrado = 15.370; $p = 0.000$), el nivel educativo (ji cuadrado = 35.946; $p = 0.000$) y la historia previa de contacto estrecho (ji cuadrado = 8.113; $p = 0.004$). No se observó asociación para el sexo e historia previa de caso confirmado. Específicamente, las preguntas consideradas de mayor dificultad en el cuestionario se asociaron significativamente con la zona básica de salud: concepto de contacto estrecho (Pregunta 3) (ji cuadrado = 13.608; $p = 0.001$); modo de prevención de contagio (Pregunta 6) (ji cuadrado = 10.376; $p = 0.006$). No obstante, no se observó ninguna asociación en relación con el tiempo de aislamiento (Pregunta 4) (ji cuadrado = 5.489; $p = 0.064$).

La Tabla 3 muestra las OR de la asociación de las variables sociodemográficas y el nivel de conocimientos

Tabla 1. Descripción de la muestra según las características sociodemográficas.

	Área 1: Calzada n (%)	*Área 2: Zarracina n (%)*	*Área 3: Parque-Somió n (%)*	*Total n (%)*
SEXO				
Femenino	66 (21.64)	43 (14.10)	65 (21.31)	174 (57.05)
Masculino	61(20)	25 (8.20)	45 (14.75)	131 (42.95)
GRUPO ETARIO (en años)				
14- 24	13(4.26)	7 (2.30)	12 (3.93)	32 (10.49)
25- 45	54 (17.70)	23 (7.54)	53 (17.38)	130 (42.62)
46– 64	60 (19.67)	38 (12.46)	45 (14.75)	143 (46.89)
MÁXIMO NIVEL EDUCATIVO ALCANZADO				
Sin estudios	1 (0.33)	0 (0)	2 (0.66)	3 (0.98)
Estudios primarios	53 (17.38)	9 (2.95)	9 (2.95)	71 (23.28)
Estudios secundarios/ bachillerato	17 (5.57)	17 (5.57)	23 (7.54)	57 (18.69)
Formación profesional	30 (9.84)	12 (3.93)	19 (6.23)	61 (20)
Estudios universitarios	25 (8.20)	22 (7.21)	39 (12.79)	86 (28.2)
Estudios de posgrado universitario	1 (0.33)	8 (2.62)	18 (5.9)	27 (8.85)
FUENTE DE INFORMACIÓN MÁS CONSULTADA				
Televisión	60 (19.67)	27 (8.85)	48 (15.74)	135 (44.26)
Prensa escrita	11 (3.61)	19 (6.23)	10 (3.28)	40 (13.11)
Radio	6 (1.97)	2 (0.66)	1 (0.33)	9 (2.95)
Páginas y sitios web	28 (9.18)	11 (3.61)	32(10.49)	71 (23.28)
Redes sociales	20 (6.56)	5 (1.64)	6 (1.97)	31 (10.16)
Entorno o comunidad	2 (0.66)	4 (1.31)	13 (4.26)	19 (6.23)
CONTACTO POSITIVO CERCANO				
Sí	50 (16.39)	15 (4.92)	43 (14.1)	108 (35.41)
No	77 (25.25)	53 (17.38)	67 (21.97)	197 (64.59)
COVID+				
Sí	33 (10.82)	9 (2.95)	27 (8.85)	69 (22.63)
No	94 (30.28)	59 (19.34)	83 (27.21)	236 (77.38)
PUNTUACIÓN MEDIA EN EL CUESTIONARIO	7.82 (DE=1.26)	7.85(DE=1.21)	8.27(DE=1.32)	7.99(DE=1.28)
CONOCIMIENTO AVANZADO				
Sí	19 (6.23)	14 (4.59)	40 (13.11)	73 (23.93)
No	108(35.41)	54 (17.70)	70 (22.95)	232 (76.07)

de la muestra estudiada. En la Tabla 4 se muestran los coeficientes b del modelo finalista predictivo de poseer conocimientos avanzados, así como sus IC 95 %, los valores p obtenidos y los valores VIF. El área bajo la curva ROC fue del 92 %. En el modelo finalista, el valor p para la prueba de Hosmer-Lemeshow fue de 0.773, por lo que el modelo predictivo tiene un buen ajuste.

Discusión

Los datos obtenidos en este trabajo son concordantes con los encontrados en otros estudios similares. Siddiqui *et al.* (18) realizaron una encuesta basada en los consejos de la Organización Mundial de la Salud (OMS) a 443 personas que vivían en Arabia Saudí, y observaron que el nivel de conocimientos variaba entre zonas. Bates

Tabla 2. Puntuaciones medias de conocimiento y DE estratificadas por sexo y zona básica de salud y por sexo en el conjunto de la población estudiada, así como el resultado de la prueba t de medias y su valor *p*.

	MUJER		*HOMBRE*		*t*	*Valor p*
	Media	*DE*	*Media*	*DE*		
Calzada	7.86	0.16	7.77	0.16	0.67	0.339
Zarracina	7.90	0.16	7.76	0.30	0.63	0.317
Parque-Somió	8.12	0.18	8.49	0.17	0.15	0.923
Global	7.97	0.10	8.02	0.11	0.77	0.616

et al. (19) realizaron una encuesta de conocimientos, actitudes y prácticas en Ecuador durante un brote de COVID-19, en el que se mostró un nivel de conocimientos moderado-alto. Baldassarre *et al*. (20) concluyeron que los factores sociodemográficos y económicos influían en el nivel de conocimientos. Maurya *et al*. (21) realizaron un cuestionario sobre conocimientos, actitudes y prácticas en profesionales de la salud de India, que obtuvo un nivel de conocimientos alto. Esto puede ser debido a que las personas con niveles educativos superiores están más entrenadas en la utilización de fuentes de información fiables y actualizadas, y que además tienen una mayor capacidad para discernir resultados controvertidos o falsa información, como observaron Zhou *et al*. (22).

En este estudio, la franja de edad entre 25-45 años presentó mayor nivel de conocimientos. Sin embargo, Corrales-Reyes *et al*. (23), en su estudio transversal analítico en adultos, asociaron este mayor nivel de conocimientos a grupos de menor edad, mientras que Esquivel Riveros y González (24) no encontraron asociación con la edad en su estudio, realizado en personas mayores de 15 años. En los estudios consultados no hubo una forma homogénea de categorizar la edad, por lo que resulta difícil establecer un criterio a la hora de explicar la variabilidad de los resultados.

En el presente trabajo, la fuente de información que más se asoció al nivel avanzado de conocimientos fue el entorno o la comunidad, seguida por la televisión. Zhou *et al*. (22) observaron en su estudio, sobre una muestra de 4 788 participantes, que la principal fuente de información empleada y con mejores resultados sobre el nivel de conocimientos fue la televisión y que las personas que se informaron a través de expertos mostraron mayor capacidad de discernir la información adecuada en las noticias.

En cuanto a los niveles de conocimientos relacionados con la morbilidad, no se encontraron estudios hasta la fecha que aborden la asociación entre historia previa de COVID-19 (bien sea caso confirmado o contacto estrecho) y nivel de conocimientos. En este estudio, la historia previa de contacto estrecho se asoció a un nivel mayor de conocimientos, al contrario de la historia previa de caso confirmado, donde no se encontró dicha asociación. Este fenómeno podría deberse a que al aumentar el miedo al contagio, estas personas buscaran activamente información sobre el tema. En este sentido, Jia *et al*. (14) observaron, en su estudio transversal sobre conocimientos, actitudes y prácticas en estudiantes universitarios, un nivel elevado de conocimientos en aquellas situaciones de mayor incidencia /severidad de la pandemia.

En este trabajo no se encontró asociación entre el sexo y el nivel de conocimientos. Sin embargo, Jia *et al*. (14) y Rivera Diaz *et al*. (25) relacionaron el pertenecer al sexo femenino con un mayor nivel de conocimientos.

A pesar de que un aumento de los conocimientos suele relacionarse con una mejoría en las prácticas cotidianas de las personas, no en todos los casos es así. Beltrán *et al*. (26), en su estudio, comprobaron que los cambios de hábitos respecto a la COVID-19 que apelaban a lo grupal y a la socialización presentaban más resistencia y dificultad para su realización. La OMS señaló que una adecuada información sobre la COVID-19 permite a la población adquirir conocimientos sobre los aspectos fundamentales de la misma (27). Llanos *et al*. (28) consideraron que los conocimientos influyen en las creencias y en las actitudes que la persona manifiesta frente a la pandemia de la COVID-19. Ruiz-Aquino *et al*. (29) observaron una relación directa y estadísticamente significativa entre aspectos cognoscitivos insuficientes y actitudes desfavorables hacia la enfermedad. Azlan *et al*. (30), en su estudio realizado en Malasia, concluyeron que la población de este país poseía unos conocimientos aceptables sobre la COVID-19 y, por ende, una actitud positiva en su perspectiva de superar la crisis ocasionada por la pandemia. Sin embargo, en otro estudio (31) se señaló que, ante la percepción de desconocimiento, mejoran las actitudes hacia la COVID-19, lo que

Tabla 3. Odds ratio de conocimiento avanzado sobre COVID-19 según las características demográficas.

	Odds ratio	*Intervalo de confianza 95 %*		*Valor p*
		Inferior	*Superior*	
AREA				
Calzada (Menor nivel socioeconómico)	1			
Zarracina (Nivel socioeconómico medio)	1.474	0.687	3.163	0.320
Parque-Somió (Mayor nivel socioeconómico)	3.248	1.741	6.059	<0.000*
SEXO				
Femenino	1			
Masculino	1.04	0.617	1.782	0.861
GRUPO ETARIO (en años)				
14- 24	0.75	0.310	1.813	0.523
25- 45	1			
46– 64	0.477	0.270	0.843	0.011*
MÁXIMO NIVEL EDUCATIVO LOGRADO				
Sin estudios	1			
Estudios primarios	4.823	1.260	18.468	0.022*
Estudios secundarios/ bachillerato	6.751	1.838	24.804	0.004*
Formación profesional	14.113	4.103	48.540	<0.000*
Estudios universitarios	21.048	5.290	83.737	<0.000*
FUENTE DE INFORMACIÓN MÁS CONSULTADA				
Televisión	1			
Prensa escrita	2.119	0.960	4.675	0.063
Radio	0.55	0.066	4.599	0.581
Páginas y sitios web	1.848	0.946	3.610	0.072
Redes sociales	0.652	0.209	2.031	0.460
Entorno o comunidad	3.96	1.457	10.762	0.007*
CONTACTO POSITIVO CERCANO				
Sí	2.162	1.264	3.698	0.005*
No	1			
COVID+				
Sí	1.432	0.847	2.422	0.180
No	1			

*Valor estadísticamente significativo ($p < 0,05$).

podría estar relacionado con que las personas con menor nivel de educación, con escaso acceso a una diversidad de información sobre la COVID-19 o simplemente que no han recibido la información oportuna, solo conocen las medidas básicas para el control efectivo de la propagación de la enfermedad.

El nivel de conocimientos formales o científicos no siempre es suficiente, aunque sí necesario, para lograr que la población entienda el riesgo, en este caso, que entraña una enfermedad transmisible (ET). El problema del riesgo ante una ET se encuentra en función de la idea de contagio y de la interrupción de la vida cotidiana. El peligro y las posibilidades de contraer una ET (para contagiarse) se asocian con la cognición cotidiana que permite entender la salud y la enfermedad dentro de lógicas asociadas a la historia de vida y no a la idea de estilo de vida o comportamientos de riesgo (32).

Para Freire (33), la educación debe comenzar por la superación de la contradicción educador-educando en la que el primero hace comunicados, es quien escoge el contenido pragmático, quien tiene la

Tabla 4. Coeficientes b, intervalos de confianza y valores p del modelo predictivo obtenido mediante regresión logísitica.

		Intervalo de confianza 95 %			
	Coeficiente b	*Inferior*	*Superior*	*Valor p*	*VIF*
Calzada (Menor nivel socioeconómico)	1				
Zarracina (Nivel socioeconómico medio)	0.721	-0.338	1.779	0.182	1.19
Parque-Somió (Mayor nivel socioeconómico)	1.152	0.273	2.032	0.010*	1.22
Puntuación en el cuestionario	2.508	1.863	3.153	<0.000*	1.03
Constante	-23.423	-29.258	-17.587	<0.000*	

*Valor estadísticamente significativo ($p < 0{,}05$).

autoridad, quien piensa, mientras el educando obedece y acepta sin ningún tipo de participación en el proceso. No existe creatividad en esta práctica y, por tanto, no hay transformación ni saber. Abundando en ello, señaló que los educandos solo memorizan los conceptos dados, sin cuestionar o verificar la información recibida (educación bancaria).

En la idea de cambio social y de control del riesgo, el proceso de enseñanza-aprendizaje emerge como categoría necesaria y como un escenario privilegiado para la intervención. Sin embargo, es en este punto donde se debe pensar sobre qué se busca intervenir: la identificación y la intervención sobre factores de riesgo y, por ende, los determinantes de la enfermedad, no pueden ser separados de su carga sociopolítica, ya que intervenir sobre la salud y la enfermedad de una población implica visibilizar lo ausente en su cultura. El riesgo como probabilidad matemática es un término para reproducir modelos de intervención que no tienen en cuenta la complejidad de la salud y de la enfermedad y ayuda a explicar por qué pocos programas de control de ET han sido exitosos (32).

Este estudio presenta las siguientes limitaciones: teniendo en cuenta la naturaleza inherente de un estudio transversal, no es posible establecer una relación causal debido a que no se cumplen criterios de temporalidad y el cuestionario fue elaborado *ad hoc*, con los consiguientes condicionamientos que esto puede suponer. A pesar de estas limitaciones, y teniendo en cuenta las discrepancias halladas en la literatura, los resultados obtenidos abren futuras líneas de investigación para determinar si realmente un mayor nivel de conocimientos científicos y/o formales implican una mejor práctica de las medidas preventivas o terapéuticas frente a una enfermedad transmisible en general y frente a la COVID-19 en particular.

Conclusiones

El grupo de edad, el nivel de estudios, la zona básica de salud y la fuente de información fueron las variables que más se asociaron a un nivel alto de conocimientos en las personas residentes en Gijón (España). Las personas con historia previa de haber sido contacto estrecho mostraron un mayor nivel de conocimientos con respecto a las que no, al contrario de las personas con antecedentes de diagnóstico de COVID-19, que no obtuvieron mejores resultados.

Comprender o describir los conocimientos de la población sobre la COVID-19 y sus percepciones erróneas sobre esta enfermedad es de gran interés para las autoridades sanitarias a la hora de diseñar intervenciones educativas para prevenir la propagación de la pandemia. En este sentido, los profesionales sanitarios desempeñan un papel importante en la actualización, difusión y educación de la población general.

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Material complementario

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Factores socioeconómicos asociados por nivel de inseguridad alimentaria en adultos mexicanos con diabetes mellitus durante la pandemia de la COVID-19

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Resumen

La pandemia de la COVID-19 ha sido uno de los mayores desafíos de salud pública a nivel mundial. Afecta al sistema alimentario, ampliando las desigualdades y compromete el derecho a la alimentación y a un adecuado estado de bienestar y nutrición, especialmente entre los más vulnerables.

Objetivos: estimar la prevalencia de la inseguridad alimentaria e identificar los factores socioeconómicos asociados en adultos mexicanos con diabetes mellitus, durante la pandemia de la COVID-19.

Métodos: estudio transversal, análisis secundario de los datos de la Encuesta Nacional de Salud y Nutrición 2020 sobre la COVID-19. Se estudió a 1 232 individuos que representan a 9 569 330 adultos con diabetes mellitus. La inseguridad alimentaria se midió utilizando la Escala Latinoamericana y Caribeña de Seguridad Alimentaria adaptada para México. Se realizó un modelo de regresión logístico binario para cada nivel de inseguridad alimentaria. Se calcularon razón de momios e intervalos de confianza al 95 %. Un valor de $p < 0.05$ fue estadísticamente significativo.

Resultados: el 64.8 % presentó inseguridad alimentaria: 40.7 % leve, 14.2 % moderada y 9.9 % severa. Los factores asociados a inseguridad alimentaria leve fueron: nivel socioeconómico muy bajo (RM 2.6), pérdida del empleo de algún miembro del hogar (RM 2.0) y reducción de gastos en alimentación (RM 5.0); para inseguridad moderada la RM fue de 7.7, 3.4 y 18.6 y en severa la RM 7.1, 3.0 y 46.7, respectivamente.

Conclusiones: la COVID-19 ha tenido efectos inmediatos en la inseguridad alimentaria de la población de adultos mexicanos con diabetes mellitus. Identificar los factores socioeconómicos asociados es prioritario para llevar a cabo políticas públicas que permitan redirigir los recursos y cubrir necesidades básicas como la alimentación.

Palabras clave: COVID-19, diabetes mellitus, encuesta de salud, inseguridad alimentaria, México

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Introducción

A nivel mundial, de 1980 al 2014, el número de personas con diabetes mellitus (DM) aumentó de 108 millones a 422 millones (1). En México para el año 2021, la prevalencia de DM por diagnóstico previo fue de 10.4 %, más de 8.8 millones de personas, en la población mayor de 20 años (2).

En lo que respecta a la pandemia de la COVID-19 en México, las actividades laborales no esenciales se interrumpieron y se instauró el trabajo desde casa para muchos (3,4). En establecimientos de salud se suspendieron las actividades ambulatorias y algunos de los hospitales públicos de segundo y tercer nivel realizaron la conversión a centros de atención de la COVID-19 (5).

La pandemia ha tenido un fuerte impacto a nivel socioeconómico (NSE) en los hogares debido a sus efectos en el desempleo, la pobreza y la reducción en la compra de alimentos, con mayor posibilidad de generar inseguridad alimentaria (IA). Otros mecanismos por los cuales se ha recrudecido la IA son la interrupción en la cadena de suministros, efectos globales en la desaceleración económica e incremento en los precios de los alimentos (6).

La seguridad alimentaria (SA) existe cuando las personas tienen en todo momento acceso físico y económico a suficientes alimentos inocuos y nutritivos para satisfacer sus necesidades y sus preferencias, a fin de llevar una vida activa y sana. Por el contrario, un acceso nulo o incierto a los alimentos se ha definido como IA (7). En México en el año 2020, la prevalencia de IA aumentó una vez iniciada la pandemia en los hogares, pasando de 55.2 % en el 2018 a 61.1 % en abril del 2020 (8).

En los hogares con IA existe una mayor probabilidad de adquirir alimentos poco saludables, más baratos, altos en calorías y de bajo valor nutricional, con un consecuente aumento de peso y un mayor riesgo de empeorar las discapacidades existentes relacionadas con el sobrepeso y la diabetes (9). Por otro lado, se ha descrito con base en estimaciones por proyecciones matemáticas, que las personas que viven con diabetes podrían aumentar su riesgo de desarrollar complicaciones crónicas, en la medida en que es mayor el tiempo de confinamiento y el descontrol glucémico durante el mismo (10).

Actualmente son pocos los estudios que mencionan los factores asociados a la IA en población que presenta diabetes, durante el periodo por confinamiento debido a la pandemia. Por lo anterior, el objetivo de este estudio fue estimar la prevalencia de la IA e identificar los factores socioeconómicos (FSE) asociados por nivel de IA en adultos mexicanos con DM, durante la pandemia de la COVID-19.

Métodos

Población de estudio

Estudio transversal de fuentes secundarias, que analiza los resultados de la Encuesta Nacional de Salud y Nutrición 2020 sobre la COVID-19 (ENSANUT-COVID-19). La ENSANUT-COVID-19 realizada en México es una encuesta representativa del ámbito nacional, urbano y rural, de regiones del país y a nivel estatal. El procedimiento de muestreo fue probabilístico, polietápico y estratificado y se realizó en dos etapas: selección de viviendas y selección de individuos en las viviendas. El levantamiento de datos se llevó a cabo de agosto a noviembre del 2020 (11).

Nosotros analizamos la información para aquellos hogares donde hubo personas con diagnóstico médico previo de DM, una muestra de 1 232 hombres y mujeres mayores de 20 años, que corresponden a 9 569 330 individuos con diabetes, de una encuesta representativa a nivel nacional. El diagnóstico previo de DM se estableció con la pregunta "¿Algún médico le ha dicho que tiene diabetes o el azúcar alto en la sangre?", incluida en la ENSANUT-COVID-19. Los encuestados que respondieron afirmativamente fueron considerados como personas con diagnóstico médico previo de diabetes.

La información usada es de carácter público. Al tratarse de un estudio retrospectivo que utilizó fuentes de datos secundarios, no incurre en ningún aspecto normativo de ética médica.

Variables de estudio

Las variables para este análisis fueron: (1) Escolaridad, (2) Estado civil, (3) NSE y (4) Tipo de localidad. Las variables de la encuesta ENSANUT-COVID-19 fueron: (1) Número de personas en el hogar, (2) Situación laboral durante el confinamiento, (3) Reducción de gastos en alimentación y (4) Pérdida de empleo de algún miembro del hogar. Estas preguntas aplicadas a los entrevistados

consideraron específicamente lo ocurrido en el periodo de confinamiento del 23 de marzo al 31 de mayo del 2020. Se estimó el estado de nutrición de acuerdo con el índice de masa corporal (IMC), clasificándolo en: (1) Normal de 18.5 a 24.9 kg/m², (2) Sobrepeso de 25.0 a 29.9 kg/m² y (3) Obesidad mayor o igual a 30 kg/m²; con valores válidos de IMC entre 10 y 58 kg/m² (12).

Seguridad alimentaria

Se midió utilizando la Escala Latinoamericana y Caribeña de Seguridad Alimentaria (ELCSA), adaptada para México. Esta escala mide la experiencia y percepción de los individuos sobre la SA de su hogar. El periodo de referencia para las preguntas fueron los tres meses previos a la aplicación de la escala. Consta de 15 preguntas con opciones de respuesta "sí" o "no" dirigidas al jefe del hogar o a la persona encargada de administrar y/o preparar los alimentos.

La escala clasifica a los hogares en cuatro categorías: SA, IA leve, moderada y severa, dependiendo del número de respuestas positivas y si cuentan o no con integrantes menores de 18 años.

La categoría de SA indica que ninguno de los integrantes del hogar tuvo preocupación porque los alimentos se acabaran, además de que no tuvo que sacrificar la calidad o cantidad de los alimentos que acostumbra a consumir y tampoco tuvo que omitir tiempos de comida o dejar de comer en todo un día. Los hogares clasificados en IA leve experimentan primero preocupación por el acceso a los alimentos y, si la falta de acceso a los alimentos se prolonga, sacrifican la calidad de la dieta. Cuando los hogares se encuentran en IA moderada, reportan restricciones en la cantidad de los alimentos consumidos. Por su parte, los hogares en IA severa presentan situaciones en las que alguno de los integrantes omite tiempos de comida o deja de comer en todo un día debido a la falta de dinero o recursos para adquirir alimentos.

Con base en las repuestas se asigna un puntaje, clasificando a los hogares del siguiente modo: *IA leve*, puntaje de 1 a 5 si en el hogar hay integrantes menores de 18 años, y de 1 a 3 si hay adultos de 18 años o más. *IA moderada*, puntaje de 6 a 10 cuando hay menores de 18 años en el hogar y de 4 a 6 con personas mayores de 18. *IA severa*, puntaje de 11 a 15 con personas menores de 18 años y de 7 a 8 en caso contrario (12).

Análisis estadístico

El análisis descriptivo incluyó las frecuencias de las variables sociodemográficas para cada nivel de IA. Se realizó análisis descriptivo entre IA y las características sociodemográficas usando la prueba de chi cuadrado. Para identificar las variables potencialmente asociadas a IA se realizó un modelo de regresión logístico binario para cada nivel de IA. Se calculó la razón de momios (RM) e intervalos de confianza al 95 % (IC 95 %). Un valor de $p < 0.05$ se consideró como estadísticamente significativo. El análisis se realizó con el paquete estadístico Stata/IC 15 (Stata Corp, College Station, TX, USA).

Resultados

Se analizaron los datos de 1 232 hombres y mujeres mayores de 20 años, que representan a 9 569 330 adultos con DM. En la Tabla 1 se muestran las características de la población de estudio. El 55.1 % fueron mujeres y el resto hombres. Poco más de la mitad son adultos con edad de 50 a 69 años (50.7 %). El 48.1 % reportó no tener estudios formales y el 67.1 % es casado o tiene pareja. La prevalencia de sobrepeso u obesidad fue de 82.6 %. El 64.8 % presentó algún nivel de IA, distribuyéndose de la siguiente manera: 40.7 % leve, 14.2 % moderada y 9.9 % severa.

Las características sociodemográficas de los adultos con diabetes por nivel de SA/IA se presentan en la Tabla 2. Las mujeres presentaron una mayor IA leve y moderada (57.9 % y 57.5 %, respectivamente) comparada con la de los hombres, sin embargo, los hombres presentaron una mayor IA severa en un 52.3 %. El análisis por grupos de edad para cada nivel de IA muestra que el mayor porcentaje para IA leve se encuentra en el grupo de edad de 50 a 59 años, mientras que la IA moderada en el grupo de 60 a 69 años y severa en el de 50 a 59 años. La menor proporción de IA se encuentra en el grupo de 20 a 29 años, siendo menor en la IA moderada (0.8 %) y severa (0.9 %), en comparación con la leve (2.9 %).

Al menos la mitad de la población con algún nivel de IA reportó no tener escolaridad, observándose una tendencia en la que, a mayor nivel educativo, disminuye la proporción de sujetos con esta problemática. El menor porcentaje de IA leve y moderada se encuentra en los sujetos con escolaridad

Tabla 1. Características de los adultos con diabetes incluidos en el estudio. México, ENSANUT 2020 COVID-19.

Características	*N muestral*	*N expandida* (en miles)*	*%*	*IC95%*
Sexo				
Hombre	452	4292.5	44.9	(41.3, 48.3)
Mujer	780	5276.8	55.1	(51.6, 58.6)
Edad				
20 a 29 años	17	183.1	1.9	(0.9, 3.7)
30 a 39 años	79	721.4	7.5	(5.9, 9.4)
40 a 49 años	198	1820.5	19.0	(16.3, 22.0)
50 a 59 años	353	2480.7	25.9	(23.2, 28.8)
60 a 69 años	324	2374.6	24.8	(22.0, 27.8)
70 a 79 años	209	1536.5	16.1	(13.9, 18.4)
80 años y más	52	452.6	4.7	(3.4, 6.4)
Escolaridad[a]				
Sin escolaridad	618	4604.4	48.1	(44.7, 51.4)
Básica	302	2324.7	24.3	(21.3, 27.4)
Media superior	180	1427.3	14.9	(12.7, 17.3)
Superior y mayor	132	1213.0	12.7	(10.4, 15.2)
Estado civil				
Soltero(a)	135	962.0	10.1	(8.1, 12.3)
Casado(a)y unión libre	720	6440.5	67.3	(64.3, 70.1)
Divorciado(a)	143	785.8	8.2	(6.9, 9.7)
Viudo(a)	234	1381.0	14.4	(12.5, 16.5)
Nivel socioeconómico[b]				
Muy bajo	214	1763.1	18.4	(15.3, 21.9)
Bajo	261	1797.6	18.8	(16.3, 21.4)
Medio	275	2009.1	21.0	(18.3, 23.8)
Alto	247	1792.2	18.7	(16.4, 21.2)
Muy alto	235	2207.3	23.1	(19.9, 26.5)
Tipo de localidad[c]				
Rural	252	1599.0	16.7	(14.6, 19)
Urbana	980	7970.3	83.3	(80.9, 85.3)
Número de personas en el hogar				
1–3	682	4826.0	50.4	(47.0, 53.8)
4–5	367	3135.2	32.8	(29.5, 36.1)
6 o más	183	1608.2	16.8	(14.3, 19.5)
Situación laboral durante el confinamiento				
Sin información	719	5273.7	55.1	(51.6, 58.4)
Trabajó	380	3264.5	34.1	(31, 37.3)
No trabajó	133	1031.1	10.8	(8.9, 12.9)
Reducción de gastos en alimentación				
Sin información	1	5.2	0.1	(0.0, 0.3)
Sí	634	4996.1	52.2	(48.6, 55.7)
No	597	4568.0	47.7	(44.2, 51.2)
Pérdida de empleo de algún miembro del hogar				
Sí	286	2388.8	25.0	(22.1, 27.9)
No	946	7180.5	75.0	(72.0, 77.8)

(Continued)

Table 1. (Continued)

Características	*N muestral*	*N expandida* (en miles)*	*%*	*IC95%*
Estado de nutrición por IMC				
Normal	218	1669.2	17.4	(14.9, 20.2)
Sobrepeso	470	3674.2	38.4	(35.3, 41.5)
Obesidad	544	4225.9	44.2	(40.8, 47.5)
Condición de seguridad alimentaria				
Seguridad alimentaria	450	3369.9	35.2	(32.2, 38.2)
Inseguridad leve	494	3897.5	40.7	(37.4, 44.0)
Inseguridad moderada	175	1361.2	14.2	(12.1, 16.6)
Inseguridad severa	113	940.7	9.9	(7.9, 12.1)

Ensanut 2020 COVID-19, Encuesta Nacional de Salud y Nutrición 2020 COVID-19; IC95 %, Intervalo de confianza 95 %; IMC, índice de masa corporal en kg/m².

[a]Escolaridad: (1) Sin escolaridad, cuando no se tienen estudios formales, primaria o secundaria; (2) Básica, cuando solo se concluyó el nivel de estudios de secundaria; (3) Media superior, incluye la preparatoria, bachillerato o estudios técnicos, y (4) Superior y mayor, en personas con licenciatura o posgrado.

[b]Nivel socioeconómico: A partir de un índice de condición de bienestar que incluye las características de las viviendas, bienes y servicios disponibles.

[c]Tipo de localidad: (1) Rural, localidades con menos de 2 500 habitantes y (2) Urbano, localidades de 2 500 o más habitantes.

*n = 1 232 individuos que representan a 9 569 330 personas.

superior o mayor (11.3 % y 5.4 %, respectivamente) mientras que, para la severa, el menor porcentaje se encuentra en aquellos con escolaridad media superior (8.2 %).

La mayor proporción de sujetos con SA tienen un NSE muy alto (33.0 %), alto (21.2 %) y medio (21.5 %). Para la IA leve se observa que esta proporción es similar en los diferentes NSE, siendo discretamente mayor en el nivel muy alto (22.8 %) y alto (20.6 %) en comparación con el nivel medio (19.8 %) y muy bajo (18.3 %). La mayor proporción de sujetos en los niveles de IA moderada y severa tienen un NSE muy bajo (31.0 % y 35.8 %, respectivamente), $p < 0.001$.

Con respecto al tipo de localidad, fue en las áreas urbanas donde se presentó una mayor proporción de sujetos con algún nivel de IA, siendo mayor el porcentaje para la severa (83.3 %).

La prevalencia de familias en las que hubo una reducción en gastos para la compra de alimentos fue de 56.3 % en la IA leve, 88.1 % en la IA moderada y del 91.8 % en la severa. La menor prevalencia de reducción de gastos en alimentación en el hogar se observó en el grupo de SA con 19.1 %, $p < 0.001$.

A medida que empeora el nivel de IA se observa una mayor prevalencia de sujetos que reportaron la pérdida de empleo de algún miembro del hogar; el mayor porcentaje se encuentra en la IA severa (48.7 %) seguida de la moderada (38.3 %), la leve (25.2 %) y en la SA es de 12.6 %, $p < 0.001$.

No se encontraron diferencias estadísticamente significativas con las otras variables.

En la Tabla 3 se presenta el modelo de regresión logística para las variables potencialmente asociadas a IA. Pertenecer a un NSE muy bajo (RM 2.6; IC 95 % 1.6–4.3, $p < 0.001$), medio (RM 1.7; IC 95 % 1.1–2.6, $p = 0.009$) y alto (RM 1.5; IC 95 % 1.0–2.3, $p = 0.04$) se asoció a una mayor posibilidad de IA leve cuando se comparó con el grupo de NSE muy alto. La pérdida de empleo de algún miembro del hogar (RM 2.0; IC 95 % 1.3–2.9, $p < 0.001$) y la reducción de gastos en alimentación (RM 5.0; IC 95 % 3.7–6.8, $p < 0.001$) aumentaron la posibilidad de IA leve.

Por otro lado, tener un NSE muy bajo (RM 7.7; IC 95 % 3.3–18.0, $p \leqslant 0.001$), bajo (RM 3.3; IC 95 % 1.5–7.3, $p = 0.003$) y medio (RM 3.8; IC 95 % 1.7–8.4, $p = 0.001$), se asoció significativamente a una mayor posibilidad de IA moderada, cuando se comparó con el grupo de NSE muy alto; así como también la pérdida de empleo de algún miembro del hogar (RM 3.4; IC 95 % 1.9–6.0, $p < 0.001$) y la reducción de gastos en alimentación (RM 18.6; IC 95 % 11.2–30.9, $p < 0.001$).

Tabla 2. Características sociodemográficas de los adultos con diabetes por nivel de seguridad/inseguridad alimentaria. México, ENSANUT 2020 COVID-19.

	Nivel de seguridad alimentaria																
	Seguridad alimentaria				*Inseguridad leve*				*Inseguridad moderada*				*Inseguridad severa*				
Características	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*Valor de p*
Sexo																	
Hombre	176	1579.9	46.9	(41.4, 52.4)	165	1641.3	42.1	(36.7, 47.6)	62	579.0	42.5	(34.4, 51.0)	49	492.3	52.3	(41.8, 62.5)	0.34
Mujer	274	1790.0	53.1	(47.5, 58.5)	329	2256.2	57.9	(52.3, 63.2)	113	782.2	57.5	(48.9, 65.5)	64	448.4	47.7	(37.4, 58.1)	
Edad																	
20 a 29 años	8	51.6	1.5	(0.7, 3.2)	6	111.7	2.9	(1.1, 7.1)	2	11.3	0.8	(0.1, 3.4)	1	8.6	0.9	(0.1, 6.2)	0.006
30 a 39 años	20	169.8	5.0	(3.2, 7.6)	31	303.1	7.8	(5.1, 11.4)	18	136.9	10.1	(6.4, 15.4)	10	111.7	11.9	(6.4, 20.7)	
40 a 49 años	74	646.4	19.2	(15.1, 24.0)	74	640.6	16.4	(12.9, 20.6)	35	320.5	23.5	(15.6, 33.8)	15	213.1	22.7	(13.0, 36.3)	
50 a 59 años	113	737.3	21.9	(17.9, 26.4)	147	1098.0	28.2	(23.8, 32.9)	48	344.3	25.3	(18.9, 32.9)	45	301.0	32.0	(22.9, 42.6)	
60 a 69 años	114	872.5	25.9	(21.4, 30.8)	138	925.6	23.7	(19.8, 28.1)	46	363.7	26.7	(19.3, 35.6)	26	212.7	22.6	(15.2, 32.2)	
70 a 79 años	94	713.8	21.2	(16.8, 26.2)	79	587.6	15.1	(11.9, 18.8)	23	166.6	12.2	(7.9, 18.4)	13	68.5	7.3	(4.3, 11.9)	
80 años y más	27	178.6	5.3	(3.5, 7.8)	19	230.9	5.9	(3.5, 9.8)	3	17.9	1.3	(0.5, 3.1)	3	25.1	2.7	(0.8, 8.0)	
Escolaridad[a]																	
Sin escolaridad	204	1455.2	43.2	(37.8, 48.6)	256	1965.7	50.4	(45.1, 55.7)	93	695.2	51.1	(42.2, 59.8)	65	488.3	51.9	(40.7, 62.8)	< 0.001
Básica	99	737.3	21.9	(17.4, 27.0)	119	849.7	21.8	(17.7, 26.4)	53	448.3	32.9	(24.9, 42.0)	31	289.4	30.8	(21.5, 41.7)	
Media superior	75	562.7	16.7	(13.4, 20.6)	71	643.2	16.5	(12.8, 20.9)	23	144.3	10.6	(7.1, 15.3)	11	77.1	8.2	(4.4, 14.5)	
Superior y mayor	72	614.6	18.2	(13.9, 23.4)	48	438.9	11.3	(8.4, 14.9)	6	73.4	5.4	(3.0, 9.3)	6	86.0	9.1	(3.5, 21.8)	
Estado civil																	
Soltero(a)	52	322.7	13.9	(11.1, 17.1)	55	414.1	17.2	(13.8, 21.2)	18	134.6	17.1	(11.5, 24.5)	10	90.6	18.2	(11.3, 27.9)	0.37
Casado(a)y unión libre	251	2257.2	67.0	(62.3, 71.3)	293	2613.5	67.1	(62.3, 71.4)	106	934.5	68.7	(60.8, 75.5)	70	635.3	67.5	(56.6, 76.8)	
Divorciado(a)	49	225.6	2.4	(1.2, 4.6)	59	320.7	1.6	(0.9, 2.8)	23	148.8	3.7	(1.7, 7.6)	12	90.8	1.1	(0.2, 4.5)	
Viudo(a)	98	564.5	16.8	(13.5, 20.5)	87	549.1	14.1	(11.1, 17.5)	28	143.3	10.5	(6.7, 16.0)	21	124.1	13.2	(7.5, 21.9)	

(Continued)

Table 2. (Continued)

	Nivel de seguridad alimentaria																
	Seguridad alimentaria				*Inseguridad leve*				*Inseguridad moderada*				*Inseguridad severa*				
Características	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*n*	*N*(miles)*	*%*	*IC95 %*	*Valor de p*
Nivel socioeconómico[b]																	
Muy bajo	42	285.1	8.5	(5.8, 12.0)	81	719.3	18.5	(14.1, 23.6)	53	422.4	31.0	(23.6, 39.4)	38	336.3	35.8	(24.6, 48.6)	< 0.001
Bajo	86	533.8	15.8	(12.2, 20.2)	101	714.0	18.3	(14.5, 22.7)	43	331.4	24.3	(18.5, 31.2)	31	218.4	23.2	(15.2, 33.6)	
Medio	93	723.0	21.5	(17.4, 26.1)	116	772.3	19.8	(16.0, 24.2)	46	354.8	26.1	(19.8, 33.4)	20	158.9	16.9	(9.8, 27.4)	
Alto	104	715.4	21.2	(17.4, 25.6)	109	803.9	20.6	(16.7, 25.1)	20	144.2	10.6	(6.8, 16.0)	14	128.7	13.7	(8.0, 22.2)	
Muy alto	125	1112.7	33.0	(27.4, 39.0)	87	888.0	22.8	(18.2, 28.0)	13	108.4	8.0	(4.1, 14.7)	10	98.4	10.5	(4.6, 21.9)	
Tipo de localidad[c]																	
Rural	83	449.1	13.3	(10.9, 16.0)	105	681.8	17.5	(13.8, 21.7)	43	316.5	23.3	(17.0, 30.9)	21	151.6	16.7	(14.4, 19.2)	0.04
Urbana	367	2920.8	86.7	(83.9, 89.0)	389	3215.7	82.5	(78.2, 86.1)	132	1044.7	76.7	(69.0, 82.9)	92	789.1	83.3	(80.7, 85.5)	
Número de personas en el hogar																	
1–3	274	1878.2	55.7	(49.9, 61.3)	253	1839.8	47.2	(41.6, 52.8)	89	632.3	46.5	(38.3, 54.7)	66	475.7	50.6	(39.9, 61.1)	0.30
4–5	119	943.8	28.0	(23.2, 33.3)	165	1401.4	36.0	(30.4, 41.8)	56	511.3	37.6	(29.8, 45.9)	27	278.8	29.6	(20.1, 41.2)	
6 o más	57	547.9	16.3	(11.8, 21.8)	76	656.3	16.8	(12.8, 21.6)	30	217.6	16.0	(10.9, 22.7)	20	186.3	19.8	(11.7, 31.4)	
Situación laboral durante el confinamiento																	
Sin información	255	1767.4	52.4	(46.8, 57.9)	298	2241.3	57.5	(52.5, 62.3)	102	779.7	57.3	(49.5, 64.6)	64	485.4	51.6	(40.0, 63.0)	0.07
Trabajó	155	1287.2	38.2	(33.2, 43.4)	147	1305.7	33.5	(28.9, 38.3)	44	366.7	26.9	(20.2, 34.8)	34	305.0	32.4	(22.4, 44.2)	
No trabajó	40	315.3	9.4	(6.4, 13.3)	49	350.6	9.0	(6.4, 12.4)	29	214.9	15.8	(10.7, 22.5)	15	150.3	16.0	(9.0, 26.6)	
Reducción de gastos en alimentación																	
Sin información	—	—	—	—	1	5.2	0.1	(0.0, 0.9)	—	—	—	—	—	—	—	—	< 0.001
Sí	90	645.0	19.1	(17.5, 21.4)	288	2259.2	58.0	(52.4, 63.3)	150	1195.7	88.1	(84.9, 90.7)	106	896.2	91.8	(88.9, 94.1)	
No	360	2724.9	80.7	(78.6, 82.5)	205	1633.0	41.9	(36.5, 47.4)	25	165.5	11.9	(9.3, 15.1)	7	44.5	8.2	(5.9, 11.1)	
Pérdida de empleo de algún miembro del hogar																	
Sí	51	426.0	12.6	(9.2, 16.9)	119	982.5	25.2	(20.7, 30.2)	65	521.9	38.3	(30.4, 46.8)	51	458.4	48.7	(37.1, 60.4)	< 0.001
No	399	2943.9	87.4	(83.0, 90.7)	375	2914.9	74.8	(69.7, 79.2)	110	839.4	61.7	(53.1, 69.5)	62	482.3	51.3	(39.5, 62.8)	
Estado de nutrición por IMC																	
Normal	86	645.4	19.2	(15.1, 23.8)	87	654.6	16.8	(13.3, 20.9)	24	215.9	15.9	(9.7, 24.7)	21	153.4	16.3	(9.9, 25.4)	0.13
Sobrepeso	186	1486.1	44.1	(38.6, 49.7)	173	1423.3	36.5	(31.7, 41.6)	71	451.8	33.2	(25.0, 42.4)	40	312.9	33.3	(23.8, 44.2)	
Obesidad	178	1238.4	36.7	(31.9, 41.8)	234	1819.6	46.7	(41.0, 52.3)	80	693.6	51.0	(41.2, 60.6)	52	474.4	50.4	(39.6, 61.1)	

Ensanut 2020 COVID-19, Encuesta Nacional de Salud y Nutrición 2020 COVID-19;
IC95 %, Intervalo de confianza 95 %; IMC, índice de masa corporal en kg/m².
[a]Escolaridad: (1) Sin escolaridad, cuando no se tienen estudios formales, primaria o secundaria; (2) Básica, cuando solo se concluyó el nivel de estudios de secundaria; (3) Media superior, incluye la preparatoria, bachillerato, o estudios técnicos; y (4) Superior y mayor, en personas con licenciatura o posgrado.
[b]Nivel socioeconómico: A partir de un índice de condición de bienestar que incluye las características de las viviendas, bienes y servicios disponibles.
[c]Tipo de localidad: (1) Rural, localidades con menos de 2 500 habitantes y (2) Urbano, localidades de 2 500 o más habitantes.
**n* = 1 232 individuos que representan a 9 569 330 adultos.

Tabla 3. Modelo de regresión logística por nivel de inseguridad alimentaria en adultos con diabetes. México, ENSANUT 2020 COVID-19.

Modelo 1. Inseguridad alimentaria leve			
	RM	*IC95 %*	*Valor de p*
Nivel socioeconómico[a]			
Muy alto	Referencia		
Muy bajo	2.6	(1.6, 4.3)	< 0.001
Bajo	1.5	(0.9, 2.3)	0.06
Medio	1.7	(1.1, 2.6)	0.009
Alto	1.5	(1.0, 2.3)	0.04
No hubo pérdida de empleo de algún miembro del hogar	Referencia		
Pérdida de empleo de algún miembro del hogar	2.0	(1.3, 2.9)	< 0.001
No hubo reducción de gastos en alimentación	Referencia		
Reducción de gastos en alimentación	5.0	(3.7, 6.8)	< 0.001
Modelo 2. Inseguridad alimentaria moderada			
	RM	*IC95 %*	*Valor de p*
Nivel socioeconómico (a)			
Muy alto	Referencia		
Muy bajo	7.7	(3.3, 18.0)	< 0.001
Bajo	3.3	(1.5, 7.3)	0.003
Medio	3.8	(1.7, 8.4)	0.001
Alto	1.4	(0.6, 3.4)	0.39
No hubo pérdida de empleo de algún miembro del hogar	Referencia		
Pérdida de empleo de algún miembro del hogar	3.4	(1.9, 6.0)	< 0.001
No hubo reducción de gastos en alimentación	Referencia		
Reducción de gastos en alimentación	18.6	(11.2, 30.9)	< 0.001
IMC			
Normal	Referencia		
Sobrepeso	1.4	(0.7, 2.8)	0.31
Obesidad	1.5	(0.7, 3.0)	0.23
Modelo 3. Inseguridad alimentaria severa			
	RM	*IC95 %*	*Valor de p*
Tipo de localidad[b]			
Rural	Referencia		
Urbano	1.2	(0.5, 2.7)	0.5
Nivel socioeconómico[a]			
Muy alto	Referencia		
Muy bajo	7.1	(2.5, 19.9)	< 0.001
Bajo	2.1	(0.8, 5.5)	0.09
Medio	2.1	(0.8, 5.6)	0.12
Alto	1.1	(0.4, 3.1)	0.8

(Continued)

Table 3. (Continued)

Modelo 3. Inseguridad alimentaria severa			
	RM	*IC95 %*	*Valor de p*
No hubo pérdida de empleo de algún miembro del hogar	Referencia		
Pérdida de empleo de algún miembro del hogar	3.0	(1.6, 5.8)	0.001
No hubo reducción de gastos en alimentación	Referencia		
Reducción de gastos en alimentación	46.7	(19.6, 101.9)	< 0.001

Ensanut 2020 COVID-19, Encuesta Nacional de Salud y Nutrición 2020 COVID-19; IC95 %, Intervalo de confianza 95 %; IMC, índice de masa corporal en kg/m²; RM, Razón de momios.
[a]Nivel socioeconómico: A partir de un índice de condición de bienestar que incluye las características de las viviendas, bienes y servicios disponibles
[b]Tipo de localidad: (1) Rural, localidades con menos de 2 500 habitantes y (2) Urbano, localidades de 2 500 o más habitantes.

Las variables asociadas a una mayor posibilidad de IA severa fueron: NSE muy bajo (RM 7.1; IC 95 % 2.5–19.9, $p < 0.001$) comparada con el grupo de NSE muy alto, la pérdida del empleo de algún miembro del hogar (RM 3.0; IC 95 % 1.6–5.8, $p = 0.001$) y la reducción de gastos en alimentación (RM 46.7; IC 95 % 19.6–101.9, $p < 0.001$).

Discusión

Durante el periodo de confinamiento por la COVID-19 en México, el 64.1 % de los sujetos con DM presentó IA, 40.3 % tuvo IA leve, 14.1 % moderada y 9.7 % severa. Estudios recientes en población general mexicana durante el periodo de confinamiento, muestran que 59.4 % de individuos presentaron algún nivel de IA, siendo las más frecuentes la IA leve (38.6 %) y la severa (7.8 %) (13). Esta diferencia porcentual mayor en sujetos con DM que en población general se podría explicar por la demanda económica que implica tener DM, reflejada en el gasto de bolsillo de las familias (14). Al respecto, Arredondo y Barceló han reportado que el gasto de bolsillo corresponde al mayor costo de la DM en México (52 %), por encima del gasto que realiza el sistema público de salud (15), lo que podría explicar esta diferencia.

Entre los factores asociados a una mayor posibilidad de IA en sujetos con DM, encontramos que el NSE muy bajo aumentaba 2.6 veces la posibilidad de IA leve, 7.7 veces de IA moderada y 7.1 veces de la severa. En el estudio realizado por Gaitán *et al* (8) se encontró que los hogares con NSE más bajo presentaron una mayor prevalencia de IA moderada y severa (28.9 % y 20.9 %, respectivamente) y, por el contrario, los hogares en el nivel más alto tenían una prevalencia más baja de la misma (1.8 % y 0.0 %), aun cuando esos resultados representan hogares mexicanos en donde habitaban personas con y sin DM, dan cuenta de la asociación que existe entre NSE y la IA. Además, dada la construcción de la variable de NSE que incluye características sociodemográficas y de posesión de bienes, podríamos suponer que los sujetos en los cuartiles más bajos eran vulnerables o presentaban algún nivel de IA previo a la pandemia. Seligman *et al* (16) reportan que la IA en personas que viven con DM tipo 2 de bajos ingresos, afecta en el control glucémico deficiente, mediado parcialmente por la dificultad para seguir una dieta saludable.

La edad no fue un factor asociado a la IA en los modelos de regresión, a pesar de mostrar diferencias en el análisis descriptivo. Adicionalmente, encontramos una mayor frecuencia de IA en localidades urbanas, sin embargo, este no fue un factor de riesgo consistente en los modelos de regresión logística, siendo los cambios económicos que ocurrieron durante la pandemia dentro de los hogares, factores más relevantes.

La asociación entre la IA con variables tales como la pérdida del empleo durante el confinamiento y la reducción de gastos en alimentación podría obedecer a efectos inmediatos de la pandemia. Se ha documentado que variables como el ingreso mensual por debajo de la línea de pobreza aumentaron la posibilidad de IA moderada (RM 5.33; IC 95 %

4.44–6.40) y severa (RM 6.87; IC 95 % 5.54–8.51), esto en población jordana durante la pandemia (17).

Adicionalmente se ha postulado que la positividad al SARS-CoV-2 modifica la reducción de sueldo, lo que a su vez impacta en la IA. Ávila-Arcos *et al* (13) encontraron que por cada miembro del hogar que pierde el empleo, aumenta 1.6 veces la posibilidad de IA (RM 1.64; IC 95 % 1.4–1.9). Estos resultados son consistentes con los nuestros, donde la pérdida de empleo de algún miembro del hogar aumentó 2 veces la posibilidad de IA leve, 3.4 veces la posibilidad de IA moderada y 3 veces de IA severa. A pesar de que ambos estudios no son directamente comparables debido a que nuestro artículo se enfoca en adultos con DM, mientras que el estudio de Ávila-Arcos *et al* analiza a la población general evaluando el impacto de la positividad al SARS-CoV-2 en la IA, es de suponer que la pérdida y/o la reducción de ingresos afectará por igual a adultos sanos y con DM.

El problema de la IA durante la pandemia de la COVID-19 afectó en gran medida a grupos vulnerables. La Organización de Estados Americanos (OEA) reunió la experiencia de diferentes países para enfrentar la IA durante la pandemia de la COVID-19. Las estrategias contemplaron, entre otras, la entrega de tarjetas para la compra de alimentos, apoyo a la producción agropecuaria nacional y local, entrega directa de alimentos a grupos específicos y la promoción de entornos saludables a través de educación en salud (18). En países como Estados Unidos, Canadá (19) y Brasil (20) se implementaron redes de seguridad social que incluyeron la transferencia de dinero y cupones de alimentos a hogares de bajos ingresos. En países africanos se realizó la transferencia de dinero que mostró ser una solución más efectiva que la transferencia de alimentos (21). En nuestro país, Vilar-Compte *et al* (22) estimaron el costo de programas sociales para proteger a los hogares más vulnerables durante la pandemia, calculando que 4 522 182 hogares serían elegibles para recibir apoyo a través de la transferencia de dinero mensual, con un costo total de 715.6 millones de dólares americanos. A través de programas del gobierno federal, se otorgó la garantía de precios y compra directa a productores de granos básicos y leche, así como el abastecimiento de productos básicos en zonas rurales a costo reducido (23). Los programas sociales en México se crearon básicamente para apoyar a los sectores más afectados por la pandemia y mitigar el efecto asociado a las condiciones de vulnerabilidad debido a la pobreza, factor determinante por cuanto limita el acceso a necesidades básicas de alimentación, salud, educación y bienestar en general (24). Sin embargo, hasta donde sabemos, no existen por el momento en nuestro país acciones específicas para la atención de las personas que viven con diabetes, quienes de acuerdo con los resultados de nuestro estudio también son un grupo vulnerable en el que los FSE adversos aumentaron la posibilidad de presentar IA.

Por otro lado, el estudio de Ávila-Arcos *et al* (13) menciona como una posible explicación de la presencia de IA en los hogares, las medidas sobre el confinamiento y las restricciones de quedarse en casa, así como el cierre de lugares de trabajo que tuvo como consecuencia la pérdida de empleo y la disminución de los ingresos, factores que, en nuestro estudio, fueron determinantes para la IA y que posibilitan una disminución o restricción en la cantidad y calidad de alimentos. En este sentido, consideramos que el análisis de la asociación de la IA con variables como el cambio de alimentación, actividad física o gastos en servicios médicos, podría ser motivo de estudio en el futuro para esclarecer el efecto de cada una en la IA de personas que viven con diabetes, durante la pandemia de la COVID-19.

Una de las principales fortalezas del estudio es que, al analizar datos de una encuesta nacional, pudimos obtener información que es representativa de la población mexicana de adultos con DM durante el periodo de confinamiento por la pandemia de la COVID-19. Desde el conocimiento de los autores, no hay evidencia científica que muestre los FSE asociados a la IA en adultos mexicanos con DM durante la pandemia.

Una limitación del estudio es que no se profundizó en otras variables, tal es el caso del tipo de seguridad social de los encuestados, que ayudaría a explicar cómo el gasto de bolsillo en personas que viven con diabetes afecta la economía familiar y subsecuentemente la SA. Finalmente, la prevalencia de DM en nuestra población de estudio podría estar subestimada, debido a que solo se incluyó a individuos con diagnóstico médico previo de la enfermedad, de modo que los resultados encontrados son representativos solamente de la población con este padecimiento.

Conclusiones

Los efectos de la pandemia a corto plazo han magnificado problemas en la economía de los hogares mexicanos que los pueden predisponer a la IA. Si bien, la asociación entre el ingreso familiar y la SA ha quedado bien establecida, la pandemia de la COVID-19 tiene un importante impacto socioeconómico para los hogares por sus efectos en el desempleo, la pobreza y la consiguiente reducción de la compra de alimentos. Por lo tanto, es indispensable un entendimiento de estos mecanismos en adultos mexicanos con diabetes para llevar a cabo políticas públicas que permitan redirigir los recursos y cubrir necesidades básicas como la alimentación.

Declaración de conflicto de intereses

Ningún conflicto declarado.

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Resúmenes

Relación entre el alfabetismo para la salud, el conocimiento de la COVID-19 y la adherencia a las medidas preventivas en Turquía

Erdal Ceylan y Ayşegül Koç

A pesar de la vacunación y de las diferentes políticas de prevención, la pandemia por el coronavirus (COVID-19) mantiene sus efectos negativos a escala mundial. Por esta razón, la población debe estar informada de manera apropiada y debe poner en práctica este conocimiento para adoptar las precauciones necesarias, lo que se puede lograr a través de un adecuado alfabetismo en salud. En dicho contexto, el objetivo de este estudio fue el de establecer la relación entre el alfabetismo para la salud, la COVID-19 y la adherencia a las medidas preventivas. La muestra de esta encuesta descriptiva de corte transversal, en línea, estuvo compuesta por 1 086 personas. Para recolectar los datos se utilizaron cuestionarios demográficos, la Escala Europea de Alfabetización en Salud, el Cuestionario de Evaluación de Conocimiento de la COVID-19 y el Cuestionario de Evaluación de Adherencia a la COVID-19. El índice de alfabetismo en salud de los participantes tuvo una puntuación media de 30.9, con un 67.5 % que tiene inadecuado o problemático alfabetismo para la salud. El género, la edad, la educación, el estado civil, el lugar de residencia, la situación laboral y la situación económica fueron asociados con el alfabetismo en salud ($p < 0.05$). Las puntuaciones de la mediana de conocimiento y de adherencia de los participantes fueron de 40 y 54, respectivamente. Hubo una significante correlación positiva entre los puntajes del índice de alfabetismo para la salud, el conocimiento y la adherencia ($p < 0.001$). Este estudio demostró que el alfabetismo para la salud, el conocimiento de la COVID-19 y la adherencia estaban asociados mutuamente. Como resultado, las estrategias dirigidas al mejoramiento del alfabetismo para la salud pueden ser benéficas en términos de mejorar los conocimientos y de demostrar alta adhesión a las medidas para, de este modo, erradicar la pandemia de la COVID-19, reducir las condiciones relacionadas con la COVID-19 y promover la salud pública.

Palabras clave: COVID-19, alfabetismo para la salud, adherencia del cliente, prevención de enfermedades. (Global Health Promotion, 2024; 31(1): 6–14)

El alfabetismo para la salud y la lucha contra la pandemia en monitores de actividades de tiempo libre

Iago Portela-Pino, Millán Brea-Castro, Clara Portela-Pino y Margarita Pino-Juste

Introducción: el alfabetismo para la salud nos permite tomar decisiones adecuadas sobre nuestro autocuidado y usar apropiadamente los servicios de salud, por lo tanto, condiciona la salud de las personas.
Objetivos: el propósito de este estudio fue describir los niveles de alfabetismo para la salud que presentan los monitores de ocio y tiempo libre y la influencia de la autopercepción de la salud en tiempos de pandemia.
Diseño del estudio: utilizamos un diseño transversal de observación con un muestreo intencional no probabilístico entre monitores de tiempo libre en la Comunidad Autónoma de Galicia (España).
Método: para este propósito se emplearon el cuestionario de medición del alfabetismo para la salud HLS-EU-Q47 y un cuestionario de medición de percepción de la COVID-19.
Resultados: los resultados confirman que los monitores consideran que la pandemia afecta su vida cotidiana, creen que esta será una situación que permanecerá por largo tiempo y están muy preocupados. Se ratifica el bajo nivel de alfabetismo para la salud de los monitores de actividades de ocio y tiempo libre.
Conclusión: de este modo, parece urgente evaluar los programas de instrucción actuales e incluir en ellos contenidos de educación para la salud, dado el compromiso de los monitores de tiempo libre en la formación de niños y adolescentes.

Palabras clave: alfabetismo para la salud, tiempo libre, COVID-19, promoción de la salud. (Global Health Promotion, 2024; 31(1): 15–24)

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La recuperación y distribución de alimentos como estrategia para incrementar el acceso a la comida saludable en la población que enfrenta inseguridad alimentaria: lecciones para una planeación pospandemia

Alina I. Palimaru, Julia I. Caldwell, Deborah A. Cohen, Dipa Shah y Tony Kuo

A partir de datos provenientes de una encuesta por interceptación a 428 adultos, quienes recibieron productos excedentes gratuitos en cinco lugares de distribución, y de datos cualitativos de 15 entrevistas con el personal de estos organismos, examinamos a los facilitadores (como asociaciones comunitarias y coaliciones de apoyo) y los desafíos (capacidad limitada de refrigeración y falta de infraestructura de transporte, por ejemplo) del programa de recuperación y distribución de comida en el condado de Los Ángeles. En general, esta intervención del sistema alimentario pareció cubrir una necesidad insatisfecha de los beneficiarios, cerca del 80 % de los cuales presentaba inseguridad alimentaria y el 60 % acudía al sitio varias veces al año o mensualmente. Para muchos habitantes de estas comunidades desatendidas del condado, este esfuerzo fue fundamental para aumentar el acceso a la comida saludable antes y durante la pandemia de la COVID-19. Con el fin de sostener/expandir el alcance de este programa, los gobiernos locales y los programas de asistencia alimentaria deben proporcionar mayor coordinación y supervisión, y destinar más recursos para esta infraestructura de recuperación y distribución de alimentos.

Palabras clave: recuperación de alimentos, distribución de alimentos, inseguridad alimentaria, sistema alimentario, comunidades desatendidas. (Global Health Promotion, 2024; 31(1): 25–35)

Relación entre conocimiento relacionado con la salud y las actitudes y conductas de riesgo para la salud en los estudiantes universitarios portugueses

Regina F. Alves

La evidencia científica revela una alta prevalencia de comportamientos de riesgo para la salud entre los estudiantes universitarios. Lo anterior requiere la creación de programas de educación que promuevan un mayor conocimiento sobre la salud. Sin embargo, el solo conocimiento no es suficiente para lograr los cambios de conducta, y por tanto se deben considerar otros factores, como las actitudes de salud. El objetivo de este estudio transversal fue analizar la relación entre conocimiento, actitudes y conductas de riesgo para la salud de los estudiantes universitarios. Con este propósito, se aplicó un cuestionario de autoinforme previamente validado a una muestra estratificada de 840 estudiantes, por año de estudio (alumnos de primer y de tercer año) y su área científica. Además de las preguntas demográficas, el cuestionario contenía una escala de conocimientos relacionados con la salud, una escala de actitudes de salud y preguntas sobre las conductas de riesgo para la salud. Se evidenció un pobre conocimiento en salud, pues respondieron correctamente 17.77 preguntas (SD = 4.59) de un total de 36, y obtuvieron calificaciones moderadas con relación a las actitudes de salud (M = 2.61, SD = 0.48, rango: 1–5). Los estudiantes reportaron que siempre observaron, en promedio, 3.88 (SD = 1.45) de los siete comportamientos de análisis. Los análisis de mediación indicaron que el conocimiento en salud y las actitudes hacia la salud fueron predictores de riesgo de conducta estadísticamente significativos. Además, se indicó que las actitudes hacia la salud tienen un efecto mediador entre el conocimiento en salud y las conductas de riesgo para la salud.

Los hallazgos de este estudio indican que la salud pública y las políticas de educación deben promover los comportamientos saludables entre los estudiantes universitarios, teniendo en cuenta no solo el nivel de conocimientos sino, esencialmente, el desarrollo de actitudes positivas frente a conductas de riesgo para la salud.

Palabras clave: conducta de riesgo para la salud, conocimiento del riesgo para la salud, actitudes hacia la salud, educación superior, educación para la salud. (Global Health Promotion, 2024; 31(1): 36–44)

El alfabetismo para la salud pública entre usuarios primarios del occidente de Turquía

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Contexto: el Alfabetismo para la Salud Pública (ASP) es una nueva perspectiva del Alfabetismo para la Salud (AS). A diferencia del enfoque individualista del AS, el ASP se ocupa más de los eventos de salud pública y de la promoción de la salud en toda la sociedad.
Objetivo: evaluar el ASP, un concepto desarrollado recientemente, y sus factores relacionados.
Métodos: en este estudio transversal, las personas que visitaron centros de atención primaria en salud en entornos urbanos y rurales fueron reclutadas a través del uso de un cuestionario que incluye la Escala de conocimientos en Alfabetismo para la Salud Pública y la Escala de Alfabetismo para la Salud en Adultos. De cuatro centros de atención primaria en salud en Turquía occidental, seleccionados de manera aleatoria, uno estaba ubicado en un entorno rural mientras que los otros tres en una zona urbana. Se empleó la regresión lineal múltiple para determinar los predictores para el ASP.
Resultados: el estudio de grupo estuvo compuesto por 1 672 personas, de la cuales el 55.3 % eran hombres. La edad promedio fue de 40.94 ± 15.22. El puntaje medio (min-máx.) de la Escala de conocimientos en ASP fue de 13.0 (0–17). La regresión lineal múltiple evidenció que el nivel de ingresos tenía un impacto negativo en el ASP. Sin embargo, la educación superior, el interés por la lectura, la admisión hospitalaria y el alfabetismo para la salud incrementaron los niveles de ASP. Adicionalmente, vivir en una zona urbana y no tener problemas auditivos estuvieron asociados de manera positiva con el ASP.
Conclusión: los participantes tuvieron un nivel moderado de ASP. Mejorar el alfabetismo para la salud pública debe ser una prioridad para combatir los problemas locales y globales que tienen efectos adversos en la salud de la comunidad. Con el fin de incrementar la participación comunitaria en las actividades de salud pública, las personas con bajos niveles de educación y de alfabetismo para la salud deben ser el objetivo de futuros programas de formación.
Palabras clave: alfabetismo para la salud pública, alfabetismo para la salud, atención primaria en salud, promoción de la salud. (Global Health Promotion, 2024; 31(1): 45–54)

Búsqueda de ayuda para la salud mental en México

Robin E. Gearing, Kathryne B. Brewer, Micki Washburn, Miao Yu, Pedro Isnardo de la Cruz, Adelaide Garcia Andres y Luis R. Torres

La mayoría de las personas que necesitan servicios de salud mental en México no buscan apoyo formal y tampoco servicios profesionales para cubrir sus necesidades de salud mental. Entender los comportamientos de la búsqueda de ayuda es fundamental para abordar los servicios en salud mental subutilizados y para hacer uso de los esfuerzos de promoción de la salud.
Se recopilaron datos como parte de un proyecto de investigación más amplio sobre la estigmatización y la búsqueda de ayuda para problemas relacionados con la salud mental en México. Una muestra por conveniencia de 469 adultos residentes en la Ciudad de México fue elegida para participar en el estudio mediante el uso de una metodología de viñeta experimental que evalúa el estigma social hacia los individuos con condiciones de salud mental, junto con las características y correlaciones demográficas de la búsqueda de ayuda. Todas las medidas de la encuesta se administraron en español. Se adelantó una regresión estructural para el resultado 'apertura a la búsqueda de ayuda profesional para problemas de salud mental' como una variable latente. Comparadas con los hombres, las mujeres estaban más abiertas a la búsqueda de ayuda profesional ($b = 0.09$, $p = 0.038$), así como las personas que mostraron tener una espiritualidad más alta ($b = 0.01$, $p = 0.006$), mientras que las personas que experimentaron autoestigma fueron menos abiertas a la búsqueda de ayuda profesional para problemas de salud mental ($b = -0.15$, $p = 0.005$). El autoestigma se constituyó en uno de los

mayores causantes de la baja utilización de los servicios. Contrario a estudios anteriores, la espiritualidad fue un significativo predictor positivo de la búsqueda de ayuda profesional. Un entendimiento más matizado de la búsqueda de ayuda para la salud mental en México puede ser muy útil para los esfuerzos de incrementar el servicio tanto en México como entre los latinos que viven en Estados Unidos. Dados los lazos históricos, geográficos y culturales con Estados Unidos, es importante entender la búsqueda de ayuda para la salud mental en México, que puede estar relacionada directamente con las conductas de búsqueda de ayuda en muchos latinos que han emigrado a Estados Unidos.
Se analizaron orientaciones para futuras investigaciones e implicaciones prácticas, que también incluyen una hoja de ruta para las actividades de promoción de la salud.
Palabras clave: latinos, hispanos, búsqueda de ayuda, salud mental, utilización de servicios, estigma, México. (Global Health Promotion, 2024; 31(1): 55–64)

El papel de las organizaciones comunitarias de salud en la promoción de la salud pública durante una crisis sanitaria: estudio cualitativo de las respuestas a la COVID-19 en Suráfrica y Zambia

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Mientras que la pandemia de la COVID-19 amplificó la necesidad de información de salud precisa y fácil de entender, la incertidumbre y la proliferación de desinformación contribuyeron a una significativa desconfianza en los mensajes de salud pública, especialmente entre las comunidades marginadas. Las organizaciones de salud comunitarias pueden desempeñar un papel fundamental en la creación de confianza y en el suministro de información de salud enfocada en los grupos vulnerables. Este estudio cualitativo, que se centró en las organizaciones de salud comunitarias que apoyaron las poblaciones vulnerables en Suráfrica y Zambia, encontró que durante la pandemia estas organizaciones aumentaron sus funciones y aprovecharon su acceso y credibilidad ya establecidos para apoyar a las comunidades que ellas atienden a través de la educación y los servicios de salud. Sin embargo, la dependencia de la ayuda externa limita la capacidad de las organizaciones para responder de manera efectiva y eficiente durante las crisis de salud.
Palabras clave: COVID-19, organizaciones comunitarias de salud, educación para la salud, información de salud. (Global Health Promotion, 2024; 31(1): 65–74)

Uso constante de condón ente jóvenes adultos sexualmente activos en Ghana: un análisis de la prevalencia y de los factores asociados

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El uso constante y correcto del condón ofrece un medio más seguro, económico y prácticamente eficaz para prevenir la infección por el VIH. Basado en la Encuesta Demográfica y de Salud de Ghana del 2014, con una muestra de 2 779 jóvenes sexualmente activos (hombres = 682 y mujeres = 2 097) en el rango de edad 15–24, este estudio exploró la prevalencia y los factores asociados con el uso constante de preservativos entre jóvenes adultos sexualmente activos en Ghana. Para el análisis de los datos se empleó la regresión logística multivariable. Nuestros resultados establecieron que aproximadamente 11 % de los encuestados manifestaron un uso constante del condón en su actividad sexual previa. Las mujeres fueron más propensas que los hombres a haber usado el condón constantemente.
Los resultados de la regresión logística mostraron que las mujeres que habían hecho la prueba para el VIH tenían menos probabilidades de utilizar un preservativo de manera constante. Sin embargo, quienes habían obtenido información sobre planificación familiar en medios impresos y quienes provenían de la zona norte de Ghana mostraron más probabilidad de utilizar constantemente el condón. Adicionalmente, los hombres

que profesan la religión tradicional africana presentaron menos probabilidad de usar el condón de manera constante. En contraste, los hombres ubicados en la categoría de riqueza absoluta fueron más propensos a la utilización constante del condón. Estos resultados subrayan la necesidad de campañas de cambio de conducta dirigidas a los jóvenes adultos, particularmente a aquellos que son sexualmente activos, para incentivar el uso permanente del condón, así como a quienes tienen menos conocimiento sobre planificación familiar, a quienes han realizado una prueba de VIH y a quienes profesan la religión tradicional africana.
Palabras clave: personas activas sexualmente, uso del condón, jóvenes adultos, VIH, Ghana. (Global Health Promotion, 2024; 31(1): 75–84)

Un marco de intervención para los clubes deportivos promotores de la salud: estrategias desde el terreno

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La aplicación del enfoque basado en el entorno para los clubes deportivos requiere de un marco específico contextual con el fin de instaurar y desarrollar las actividades de promoción de la salud. Incorporar las perspectivas descendentes y ascendentes en las intervenciones incrementa su eficiencia, éxito y sostenibilidad. En el 2020 se crearon el modelo de clubes deportivos promotores de la salud y el marco contextual, así como los componentes y las estrategias de intervención. Un estudio de cartografía conceptual posterior generó 35 declaraciones de las partes interesadas de los clubes deportivos, en las cuales resaltaban sus necesidades al momento de desarrollar iniciativas de promoción de la salud. Este comentario integra los resultados de la cartografía conceptual en el modelo de clubes deportivos promotores de la salud y en el marco de intervención. El proceso agregó nuevos niveles de clubes deportivos, actualizó los componentes de intervención existentes y desarrolló otros nuevos, para posteriormente clasificarlos dentro del marco contextual. El modelo revisado de clubes deportivos promotores de la salud tiene siete niveles, mientras que el marco de intervención revisado incluye 13 estrategias y 69 componentes de intervención. Este marco revisado proporciona a los clubes deportivos interesados, a los expertos y a los investigadores en salud pública un medio para desarrollar e implementar intervenciones orientadas a la promoción de la salud.
Palabras clave: clubes deportivos promotores de la salud, marco de intervención planificada, salud basada en entornos. (Global Health Promotion, 2024; 31(1): 85–90)

Historias orales: lecciones que podemos aprender del pasado

Claire Wang

La pandemia de la COVID-19 ha resaltado la importancia de la retrospectiva en la respuesta a las crisis de la salud mundial. Aunque la globalización ha amplificado las perspectivas mundiales, se han ignorado muchas de las lecciones aprendidas de brotes anteriores en comunidades indígenas. Las historias orales son tradiciones profundamente arraigadas que han desempeñado un papel significativo en las prácticas de salud de las comunidades en Canadá. Pueden proporcionar conocimientos valiosos de pasadas epidemias o situaciones con víctimas y sus consecuencias en el corto y largo plazo. Han modelado las respuestas a la COVID-19, como en el caso de comunidades indígenas implementando esfuerzos de autodeterminación, cerrando sus propias poblaciones, creando redes de contactos e implementando medidas de aislamiento. Las tradiciones han influido de manera importante en las prácticas de salud de la población en otros contextos, como el del terremoto de Cascadia en 1700 y los brotes de viruela y tuberculosis. Sin embargo, aún permanecen las objeciones para facilitar la transparencia de los datos sobre las enfermedades y la soberanía indígena. Se debe realizar esfuerzos para promover, reconocer y respetar tanto el conocimiento como las prácticas indígenas dentro del sistema de salud en general.
Palabras clave: historias orales, salud indígena, COVID, brotes, respuestas comunitarias. (Global Health Promotion, 2024; 31(1): 91–94)