Factors Associated with a Health-promoting Lifestyle among Adults and Older Adults in the Era of COVID-19: An Integrative Review

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Abstract

AIM: The aim of the study was to identify the factors associated with a health-promoting lifestyle (HPL) among adults or older adults during the COVID-19 pandemic.

METHODS: On the basis of the PRISMA guidelines, primary articles published in English within the period from December 2019 to December 2021 were searched for on five databases: PubMed, Cochrane Library, Scopus, Web of Science, and CINAHL Plus with Full Text. We also followed Whittemore and Knaff’s framework to identify HPL among adults and older adults.

RESULTS: The current review identified nine relevant studies with a total of 4,509 adults and older adults. We found that sociodemographic was associated with HPL among both adults and older adults in the COVID-19 era. The findings also asserted that a nurse-led lifestyle intervention is an effective program for improving the self-efficacy and HPL of older adults with chronic illnesses.

CONCLUSION: According to this review’s findings, individuals and health-care professionals should consider the sociodemographic and social factors associated with HPL among adults and older adults, it is important to improve and standardize the guidelines for home-based services so that they can be used properly to help them deal with the COVID-19 pandemic and similar health crises.

Introduction

The world is currently facing a terrible health crisis due to the COVID-19 (coronavirus disease 2019) pandemic. The disease is also intensifying as the virus causing it has been mutating (e.g., Omicron), causing higher morbidity and disease severity than previous disease outbreaks (e.g., SARS [severe acute respiratory syndrome], H1N1 flu [swine flu]) [1, 2]. According to the World Health Organization, as of January 4, 2022, there have been 290,959,019 active COVID-19 cases worldwide and 5,446,753 deaths from such disease, and new cases are still being detected and new deaths are still occurring [3]. COVID-19 affects people from all age groups, but especially those at risk (e.g., older adults, people with chronic diseases, and immunocompromised people), who are more likely to be infected and often develop severe symptoms leading to death [4].

During this time, the COVID-19 pandemic is affecting the aging population around the world, a high-risk group whose number is on the rise. It is especially critical for older adults to maintain good health because of their increased risk of infection and their potential for developing serious complications (e.g., pneumonia and cytokine storm) [5]. Several researchers have discovered that moderate physical activity boosts the immune response to viral respiratory infections [6], [7] and that social engagement brings health benefits to people of all ages [8]. However, the COVID-19 pandemic has posed challenges for older adults. Lockdowns, travel restrictions, and social distancing have been imposed in several countries to limit or stop the spread of the disease. These measures may affect all people, but particularly older adults, by restricting their ability to secure healthy food and their other needs [9], [10]. Moreover, physical activity, social events, residential community activities, and club operations have been suspended, and municipal facilities have ceased their onsite operations as a result of the COVID-19 shelter-in-place mandates [8], [9], [11], which causes health behavior changes in older adults.

The health promotion model (HPM) indicates that people’s adoption of health-promoting behaviors (HPBs) is influenced by their behavior-specific cognition and affect, which interact with their characteristics and experiences [12]. Health-promoting lifestyle (HPL) is a subdimensional pattern of appropriate behaviors...
(e.g., eating healthy food, engaging in physical activity, sleeping well), along with avoiding eating unhealthy food, alcohol consumption, and smoking, which can improve one’s health and well-being [13], [14]. Thus, HPL is recommended for older adults as a particularly effective strategy for improving their health behaviors and their sense of well-being, which can, in turn, improve their quality of life [15], [16]. Previous studies have found that HPL can mediate the associations between individuals’ perceived self-efficacy [9], [17], [18], and individuals’ mental health [19], [20], and older adults’ health and well-being [8, 21]. In addition, various factors contribute to the HPBs of older adults, such as marital status, monthly income, education level, physical activity, physical health, and social support [18], [21], [22], [23].

The importance of HPL’s effect on the health of older adults has become more apparent with the changes in the population pyramid and with the growth of older people’s health burden, especially during the COVID-19 pandemic. To the best of our knowledge, there have been few studies about HPL among adults and older adults in the COVID-19 era. Therefore, the current review aimed to identify factors associated with HPL among adults or older adults. It is hoped that the identification of these factors will enable the development of appropriate strategies to improve older adults’ health and well-being.

Methods

Study design

The current integrative review was conducted using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines [24], which consist of a 27-item checklist and the following four phases: (1) identification; (2) screening; (3) eligibility; and (4) inclusion of this process. To identify HPL among adults and older adults, we also followed Whittemore and Knafl’s framework [25], which consists of the following five steps: (1) problem identification; (2) literature search; (3) data evaluation; (4) data analysis; and (5) presentation.

Search strategy

One reviewer (WS) conducted a systematic literature search to identify literature indexed from database inception to December 30, 2021, using search terms based on adults and older adults and outcomes of interest. We searched for relevant studies from five online databases: PubMed, Cochrane Library, Scopus, Web of Science, and CINAHL Plus with Full Text. The following English search terms were used: "adult" (MeSH) OR "elderly" (MeSH) OR "aged" (MeSH) OR “older adults” (TIAB) OR “elderly” (TIAB) AND “health-promoting behavior” (MeSH) OR “health promotion” (MeSH) OR “Health-Promoting Lifestyle” (TIAB) OR “HPLP” (TIAB) AND “COVID-19” (MeSH) OR “SARS-CoV-2” (MeSH) OR “pandemic” (MeSH) OR “outbreak” (TIAB) OR “virus SARS-CoV-2” (TIAB) OR “coronavirus disease 2019” (TIAB). Related terms were incorporated into the search strategy to ensure that all relevant articles would be retrieved.

Eligibility criteria

Primary studies were included in the current review if they met the following criteria: (1) Study that primarily aims to examine HPL; (2) with adults or older adults (18 years old or more) as subjects; (3) published in a peer-reviewed journal in English; and (4) conducted within the period from December 2019 to December 2021. The exclusion criteria were (1) not a primary source material; and (2) an unpublished study, a conference proceeding, a published abstract, a review article (e.g., literature review, integrative review, and systematic review), a letter to the editor, a book chapter, or a published study that had not undergone a peer review process.

Data abstraction

The selected studies were published within the period from December 2019 to December 2021 and were reviewed by the two authors (W.S., S.T.) to ensure that they met the selection criteria. Disagreements were resolved be discussion with the third reviewer (J.S.). We extracted the following data from the included studies: authors’ name, country of origin, study design, target population, sample size, theoretical framework, HPL measures, HPL components, and studies variables and their associations with HPL. We also placed the data we had extracted from each primary study into a matrix table for data synthesis, as shown in Tables 1-3.

| Characteristic                                      | n (%)          |
|----------------------------------------------------|----------------|
| **Publication year**                               |                |
| 2020                                               | 2 (22.22)      |
| 2021                                               | 7 (77.78)      |
| **Country of origin**                              |                |
| China                                              | 3 (33.33)      |
| Thailand                                           | 2 (22.22)      |
| South Korea                                        | 2 (22.22)      |
| Jordan                                             | 1 (11.11)      |
| Saudi Arabia                                       | 1 (11.11)      |
| **Study design**                                   |                |
| Cross-sectional study                              | 8 (88.89)      |
| Randomized controlled trial                        | 1 (11.11)      |
| **Target population**                              |                |
| With non-communicable diseases (e.g., hypertension, stroke) | 3 (33.33) |
| General older adults                               | 3 (33.33)      |
| Mixed (healthy, unhealthy, with co-morbidity)      | 2 (22.22)      |
| With metabolic syndrome                            | 1 (11.11)      |
| **Sample size**                                    |                |
| < 200                                              | 3 (33.33)      |
| 201–400                                            | 3 (33.33)      |
| > 401                                              | 3 (33.33)      |
| **Theoretical framework**                          |                |
| Health promotion model                             | 9 (100)        |
Results

Article characteristics
In general, the results of our review indicate that in the previous relevant studies, HPL was used to assess the factors with the strongest influences on older adults’ behaviors. The total of 6,417 articles extracted (4861 from PubMed, 864 from Scopus, 438 from Cochrane Library, 132 from CINAHL Plus with Full Text, and 122 from Web of Science) were reduced to 4342 after the duplicates were removed. Of these, 219 studies remained after an initial screening of titles and abstracts. We also excluded 4216 full articles for other reasons (e.g., did not pass the abstract screening, had incorrect outcomes, literature reviews, did not focus on HPL among older adults, or published in a language other than English). Finally, nine articles that met all the study’s article eligibility criteria were included in the review. The details of the search process are illustrated in the PRISMA diagram (Figure 1).

Figure 1: PRISMA flowchart for literature selection. Adopted from PRISMA guidelines [24]

The final sample consisted of eight cross-sectional studies [9], [18], [26], [27], [28], [29], [30], [31] and one randomized controlled trial (RCT) study [32] on the HPL of older adults during the COVID-19 pandemic. Three studies (33.33%) were conducted in China [29], [31], [32]; two in Thailand [9], [27]; two in South Korea [18], [28]; one in Jordan [30]; and one in Saudi Arabia [26] (Table 1). All the nine studies made use of a self-designed questionnaire, as shown in Table 3.

Participant characteristics
Most of those in the target populations in the included studies were older adults with non-communicable diseases (n = 3; 33.33%); general older adults (n = 3; 33.33%); mixed older-adult populations such as healthy and unhealthy older adults and older adults with comorbidities (n = 2; 22.22%); and older adults with metabolic syndrome (n = 1; 11.11%). In terms of number of participants, the nine included studies had a total of 4509 older-adult participants: 200 participants or lower (n = 3; 33.33%), 201–400 participants (n = 3; 33.33%), and above 401 participants (n = 3; 33.33%). All the studies used HPM as a conceptual framework (Table 1).

Health-promoting lifestyle measures
All the studies used the Health-Promoting Lifestyle Profile (HPLP) instrument to assess the HPL of their older-adult subjects during the COVID-19 pandemic, but with different numbers of items. Four primary studies used the 52-item HPLP [9], [18], [26], [28], two used the 47-item HPLP [27], [30], one used the 48-item HPLP [29], and one used the 25-item HPLP [32].

Components of health-promoting lifestyle
Most of the studies included in this review (n = 8) used HPLP instruments to assess HPL, focusing on the health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management components [9], [18], [26], [27], [28], [29], [30], [31]. One study considered only the health responsibility, spiritual growth, and interpersonal relations components [32].

Intervention for health-promoting behaviors
Only one study conducted an RCT to examine the effectiveness of a nurse-led lifestyle intervention program on the HPL of patients with metabolic syndrome in China [32]. The lifestyle intervention consisted of a face-to-face education session (30–40 min), an educational booklet, and six telephone follow-ups (biweekly, 20–30 min/call) in three months, which followed the HPM framework. The results of this RCT showed that lifestyle intervention could reduce cardiovascular risk. Zheng, Yu [32] also found that the self-efficacy score for the nutrition and stress components and the total HPL score revealed significant improvements at 1 month (p < 0.05). Lifestyle intervention also revealed significant improvements in all the subcomponents, in the total self-efficacy score, in all the dimensions, and in the total HPL score at 3 months (p < 0.05) [32].
| Author(s) (year) (publication country) | Objective | Study design | Sample/mean age (year/sex) | Target population | HPLP measure (number of items) | HPLP components | Health responsibility | Physical activity | Nutrition | Spiritual growth | Interpersonal relations | Stress management |
|--------------------------------------|-----------|-------------|---------------------------|------------------|-------------------------------|----------------|---------------------|-------------------|-----------|-----------------|---------------------|-----------------|
| Asghar et al. (2021), Saudi Arabia   | “To evaluate the health-promoting behaviors of Saudi adults in the Jazan region during the COVID-19 pandemic” | Cross-sectional study | 30/32.13 ± 10.6/ female 72.8% | Saudi adults | HPLP-II (52-item) | × | | | | | | | |
| Charoensinprom et al. (2021), Thailand | “To determine the predictability of individual characteristics and perceived self-efficacy on health-promoting behavior” | Cross-sectional study | 42/70.18 ± 6.7/ female 81.90% | Older urban and rural Thai adults with hypertension | HPLP-II (47-item) | | | | | | | | |
| Chao (2020), South Korea | “To identify the associations of the eHealth use, eHealth literacy, informational support, and health-promoting behaviors of older adults as mediated by health self-efficacy” | Cross-sectional study | 18/67.56 ± 5.9/ female 44.6% | Older South Korean adults | HPLP-II (52-item) | | | | | | | | |
| Kim et al. (2021), China | “To identify the influence of type D personality on the health-promoting behaviors and QoL of patients with ischemic stroke in South Korea” | Cross-sectional study | 17/64.9 ± 10.9/ female 31.2% | Older South Korean adults with stroke | HPLP-II (52-item) | | | | | | | | |
| Li et al. (2021), China | “To examine the association between eHealth literacy and HRQoL, and to explore whether health-promoting behaviors mediate the association between eHealth literacy and HRQoL, among older Chinese adults” | Cross-sectional study | 23/0070.3 ± 6.4/ female 47.8% | Older Chinese adults | HPLP-II (48-item) | | | | | | | | |
| Posali et al. (2021), Thailand | “To determine the relationships among the patients characteristics, perceived self-efficacy, social support, and perceived benefits and barriers to HPBs among hospitalized patients with NCDs during the second wave of COVID-19” | Cross-sectional study | 25/0469.2 ± 8.90/ female 58.0% | Thai patients with NCDs | HPLP-II (52-item) | | | | | | | | |
| Rababah et al. (2021), Jordan | “To examine the HPBs and health needs of older adults in Jordan and the factors associated with these” | Cross-sectional study | 22/066.6 ± 6.18/ female 33.60% | Older Jordanian adults | HPLP-II (52-item) | | | | | | | | |
| Wu and Sheng (2021), China | “To describe the characteristics and relationships of social isolation and health-promoting behaviors of older Chinese adults with different health statuses” | Cross-sectional study | 48/570.1 ± 7.6/ female 64.9% | Older adults with different health conditions (healthy, with one disease, and with multiple morbidities) | HPLP-II (40-item) | | | | | | | | |
| Zheng et al. (2020), China | “To examine the effects of a nurse-led lifestyle intervention program on cardiovascular risk, self-efficacy, and the implementation of health-promoting behaviors” | Two-armed randomized controlled trial | 17/55.56 ± 10.65/ female 50.86% | Chinese adults (≥ 18 years) diagnosed with metabolic syndrome | HPLP-II (25-item) | | | × | | | | | |

HPBs: Health-promoting behaviors, HPLP-II: Health-promoting lifestyle profile II, NCDs: Non-communicable diseases, HRQoL: Health-related quality of life, COVID-19: Coronavirus disease 2019.

**Discussion**

HPM has been used to promote physical and mental well-being, particularly in older adults. The aim of this integrative review was to identify factors associated with HPL among adults and older adults in the COVID-19 era. Overall, nine primary studies included in the review adopted HPM as a conceptual framework. In this integrative review, we confirmed the associations of several factors with HPL among adults. First, we found that the associations with HPL in adults were synthesized in the article eligibility criteria, and the data obtained from them were synthesized in the review. We explored HPM as a conceptual framework. The results of this review indicate a strong relationship among certain sociodemographic factors and HPBs: Health-promoting behaviors, HPLP-II: Health-promoting lifestyle profile II, NCDs: Non-communicable diseases, HRQoL: Health-related quality of life, COVID-19: Coronavirus disease 2019.
living arrangement [29], [31], smoking history [28], drinking history [27], and chronic disease [30] are associated with HPL. Interestingly, sociodemographic factors are important predictors of the adoption of protective behaviors during the COVID-19 pandemic, particularly in older adults. According to the studies, older female adults are more likely than male adults to experience anxiety [33], and women’s anxiety levels are 3 times higher than men’s during the COVID-19 pandemic [34]. As seen in the previous studies, sociodemographic factors could explain 52% of the anxiety cases, 50.5% of the psychological well-being, and 46.9% of the depression cases among older adults during the COVID-19 pandemic [35], [36], [37]. It is important to understand what motivates people to carry out health behaviors or not to during a pandemic, given the role that human behavior plays in disease transmission.

Likewise, a previous study confirmed that higher education, high income (above US$80,000/year), and increasing age are protective against food insecurity, and that people living in rural areas expect that they will face a greater burden of food insecurity than those living in urban areas during the COVID-19 pandemic [38], which is related to health behaviors. Moreover, early evidence indicates widespread moderate-to-severe stress and economic insecurity during the pandemic [39], [40], and experts warn of the possibility of crisis-related increases in smoking and in the consumption of alcohol and other potentially addictive substances [41], [42]. We also found that

| Authors | Data source | Study variables | Factors associated with HPL |
|---------|-------------|-----------------|-----------------------------|
| Ashgar [26] | Self-designed questionnaire | Age, Gender, Body mass index, Education level, Marital status, Affected income, Number of people in the household, COVID-19 news hours per day | Gender (p < 0.05) |
| Zheng et al. [32] | Self-designed questionnaire | Age, Gender, Education level, Employment, Smoking status, Self-efficacy, Psychological well-being | Number of people in the household (p < 0.05) |

| Studies’ variables and their associations with health-promoting lifestyle |
|---|
| Author | Data source | Study variables |
|---|---|---|
| Ashgar et al. [26] | Self-designed questionnaire | Age, Gender, Body mass index, Education level, Marital status, Affected income, Number of people in the household, COVID-19 news hours per day, Type of curfew imposed, Presence of comorbidity, Number of people in the household | Gender (p = 0.036) |
| Chantakeeree et al. [27] | Self-designed questionnaire | Age, Gender, Education level, Employment, Duration of hypertension, Perceived health status, Presence of comorbidity, Perceived self-efficacy | Drinking status (p < 0.05) |
| Choi [18] | Self-designed questionnaire | Age, Education level, Employment, Perceived economic status, Perceived health status, Informational social support, Health self-efficacy | Perceived economic status (p = 0.026) |
| Kim et al. [28] | Self-designed questionnaire | Age, Education level, Education, Blood pressure, Alcohol drinking history, Antidepressant medication, Speech deficits | Smoking status (p = 0.015) |
| Li et al. [29] | Self-designed questionnaire | Age, Education level, Marital status, ADL, HRQoL | Gender (p = 0.022) |
| Posai et al. [9] | Self-designed questionnaire | Age, Gender, Body mass index, Religion, Presence of comorbidity, Perceived benefit, Perceived barriers, Perceived health status, Informational social support | Smoking status (p = 0.015) |
| Rababa et al. [30] | Self-designed questionnaire | Chronic disease, Health insurance, Age, Living arrangements | Smoking status (p = 0.01) |
| Wu and Sheng [31] | Self-designed questionnaire | Gender, Education level, Monthly income, Social isolation, Living arrangement | Gender (p < 0.05) |

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Table 3: Studies’ variables and their associations with health-promoting lifestyle

| Authors | Data source | Study variables | Factors associated with HPL |
|---------|-------------|-----------------|-----------------------------|
| Ashgar et al. [26] | Self-designed questionnaire | Age, Gender, Body mass index, Education level, Marital status, Affected income, Number of people in the household, COVID-19 news hours per day, Type of curfew imposed, Presence of comorbidity, Number of people in the household | Gender (p = 0.036) |
| Chantakeeree et al. [27] | Self-designed questionnaire | Age, Gender, Education level, Employment, Duration of hypertension, Perceived health status, Presence of comorbidity, Perceived self-efficacy | Drinking status (p < 0.05) |
| Choi [18] | Self-designed questionnaire | Age, Education level, Employment, Perceived economic status, Perceived health status, Informational social support, Health self-efficacy | Perceived economic status (p = 0.026) |
| Kim et al. [28] | Self-designed questionnaire | Age, Education level, Education, Blood pressure, Alcohol drinking history, Antidepressant medication, Speech deficits | Smoking status (p = 0.015) |
| Li et al. [29] | Self-designed questionnaire | Age, Education level, Marital status, ADL, HRQoL | Gender (p = 0.022) |
| Posai et al. [9] | Self-designed questionnaire | Age, Gender, Body mass index, Religion, Presence of comorbidity, Perceived benefit, Perceived barriers, Perceived health status, Informational social support | Smoking status (p = 0.015) |
| Rababa et al. [30] | Self-designed questionnaire | Chronic disease, Health insurance, Age, Living arrangements | Smoking status (p = 0.01) |
| Wu and Sheng [31] | Self-designed questionnaire | Gender, Education level, Monthly income, Social isolation, Living arrangement | Gender (p < 0.05) |

ADL: Activities of daily living. QoL: Quality of life. HRQoL: Health-related QoL. NS: Not significant. HPL: Health-promoting lifestyle profile. COVID-19: Coronavirus disease 2019.
gender [26], [29], [31], age [9], [26], [29], education level [26], [29], [31], monthly income [18], [28], [29], [31], current occupation [27], and living arrangement [29], [31] are associated with HPL. Our findings show that sociodemographic factors may have an impact on older adults’ positive health behaviors (eating, sleeping, and engaging in physical activity) and negative health behaviors (alcohol consumption, smoking, and drug use).

Our review also revealed that multiple social factors are associated with HPL. Of the nine primary studies that were included in our review, eight confirmed that social isolation [31], QoL [31], HRQoL [29], self-efficacy [9], [18], [27], [32], ADL [29], eHealth literacy [18], [29], eHealth use [18], perceived health status [18], [27], information social support [9], [18], perceived benefits of HPBs [9], and perceived barriers to HPBs [9] are associated with HPL among older adults during the COVID-19 pandemic. During this crisis, good COVID-19-preventive behaviors are essential for all age groups, but particularly for older adults. Older adults’ access to health information, high health literacy, high self-efficacy, and support from family, neighbors, and health-care professionals could affect their daily living activities and could improve their HPBs [11], [43], [44]. Maintaining and promoting HRQoL is a key component of HPB that includes self-actualization and health responsibility, exercise, nutrition, interpersonal support, and stress management [9], [29]. In addition, older adults’ perceptions of stress, self-efficacy, and health outcomes can be mediated by healthy behaviors [10], [45], [46].

We found only one RCT study that was conducted in patients with metabolic syndrome. The nurse-led lifestyle intervention program in such study included face-to-face education, an educational booklet, and telephone follow-ups; it was an effective intervention for improving self-efficacy and HPL in older adults with metabolic syndrome [32]. However, it is important to increase older adults’ awareness of their individual responsibility to take care of themselves and also of their social responsibility to “flatten the curve” and slow down the spread of the virus. Some countries have launched COVID-19 infection prevention campaigns for everyone living in the country. For example, the Thai government communicates daily with everyone living in Thailand via social media (e.g., Thai television channels and Thai radio) to obtain their cooperation in stopping the spread of the virus and to deliver a report on the COVID-19 situation in Thailand. To avoid acquiring COVID-19, the Thai government has advised the public to take the “DMHTT (distancing, mask wearing, hand washing, temperature checking, and Thai Chana application) precautions” seriously, advising everyone to avoid public gatherings and to stay home unless it is absolutely necessary for one to leave [10]. These policies have had a significant impact on the lives of older adults, particularly on their health habits, lifestyle pattern, social participation, physical activity, and economic slowdown.

Implications for future research and practice

The current review has several strengths. First, our findings confirm that sociodemographic factors are important predictors of HPBs among adults and older adults during the COVID-19 pandemic. Some sociodemographic factors may allow for a better understanding of HPL and may help the government detect, anticipate, and minimize the pandemic’s impact on the psychological well-being of older adults. Second, we found that social factors are essentially associated with the health behaviors of older adults (e.g., health literacy, self-efficacy, social support, and QoL). Third, a nurse-led lifestyle intervention program for nursing practice should embed the core component of HPM in HPL to improve the self-efficacy of and HPL implementation in older adults with metabolic syndrome and to promote healthy and continuing care among them.

Limitations

The current integrative review had several limitations. First, we did not include primary studies from the gray literature; future studies should therefore include unpublished papers, conference proceedings, and other reviews to reduce the publication bias. Second, only English language articles were included in this study; future studies should thus consider including articles written in languages other than English that report studies on the effect of the COVID-19 pandemic on older adults. Third, we searched for relevant articles from only five online databases and found only articles on studies conducted in Asian countries; the data obtained from these articles could not be applied to other continents and settings. Future studies should thus include more databases to increase the number of published studies obtained and included in the review, particularly studies with a variety of continent settings. Finally, we found only one RCT study; more intervention studies are needed to evaluate the effectiveness of the HPL program in improving the physical and psychological well-being of adults or older adults with chronic illnesses and to encourage transition care between older adults’ own homes and other health-care settings (e.g., hospital and nursing home).

Conclusion

HPL is important for adults and older adults especially during the COVID-19 pandemic. Our
findings show that some sociodemographic factors and social factors are associated with HPL in adults or older adults. Nurse-led lifestyle intervention was also found to be an effective program for improving the self-efficacy and HPL of older adults. Therefore, individuals and healthcare professionals should consider the sociodemographic and social factors associated with HPL in adults and older adults. In addition, it is critical to improve and standardize home-based service guidelines to ensure that they can be used effectively to assist individuals and communities in dealing with the COVID-19 pandemic and similar health crises.

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