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SYSTEMATIC REVIEW

Investigating the Relationship between Health Locus of Control and Health Behaviors: A Systematic Review

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Abstract:

Introduction:

Health locus of control is recognized as a factor affecting the development and promotion of health behaviors. The present study aimed to investigate the relationship between health locus of control and health behaviors.

Methods:

This systematic review was conducted by searching several databases including PubMed, Science Direct, Web of Science, Google Scholar, and Scopus from early April to early May 2021 using the keywords *Health Locus of Control* and *Health Behaviors*.

Results:

Out of the 1099 articles retrieved after the screening, 18 articles met the criteria for further analysis. A review of the studies showed that those who firmly believed in internal health control were more likely to engage in health behaviors.

Conclusion:

In line with the findings of this study, it is essential to focus on people's beliefs about the influence of internal factors and increase awareness about people's abilities to promote their health behaviors.

Keywords: Health locus of control, Health behaviors, Systematic review, Stress management, Physical activity, Spiritual growth.

Article History

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1. INTRODUCTION

Behavior change to improve health and healthy lifestyles is one of the priorities of the World Health Organization [1]. People's lifestyles can be improved by promoting behaviors such as nutrition, physical activity, stress management, and spiritual growth, as well as eliminating factors that negatively affect human health [2]. Promoting health-related behaviors will improve people's performance, increase their quality of life, and reduce healthcare costs [3]. One of the factors that can contribute to improving a person's health-related behaviors is the health locus of control. Individual perceptions of the health locus of control contribute to the formation of a correct under

standing of one's attention to the development and maintenance of various health-promoting and preventive behaviors [4]. In fact, the health locus of control is the degree of a person's belief about the extent to which his/her health is controlled by internal or external factors [5]. People with higher levels of self-reliance are less likely to cooperate with health care providers. The issue that is addressed through the theory of beliefs about health control is the perception of personal effectiveness and responsibility for health-related behaviors. The theory of health locus of control is a measure of personal beliefs that control people's health by internal or external factors. According to this theory, people with an internal locus of control follow positive health behaviors, while those with an external locus of control tend to engage in negative and poor health behaviors [6].

The health locus of control refers to people's beliefs about how to control the environment. In other words, the locus of

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control is a system of beliefs used by a person to evaluate his/her successes and failures according to his/her strengths and weaknesses. The health locus of control is recognized as a variable affecting the development and progress of health behaviors and therapeutic capacity and can account for health problems. The health locus of control is the amount of control a person has over specific events that occur in his/her life and ultimately predicts health behavior based on people's beliefs [7]. The health locus of control is categorized into the following concepts:

The internal health locus of control refers to the degree to which a person believes that internal factors and his/her behaviors are responsible for his or her illness and health. The *external locus control (powerful others)* refers to the degree of a person's belief that his/her health is controlled/determined under the influence of powerful others. Furthermore, *the external locus control (chance)* is defined as the degree to which a person believes that his/her health depends on factors such as fate and luck [8].

People with an external locus of control tend to believe that the things which happen in their lives are a result of external factors, such as fate, luck, and the influence of powerful others such as doctors. In contrast, people who have an internal locus of control believe that the outcomes of their actions are the results of their own abilities, and their health is directly influenced by their actions and behaviors [9].

Currently, health locus of control is recognized as a variable affecting the development and progress of health behaviors and therapeutic capacity and can account for health problems [10].

Health behaviors are those behaviors that affect people's

health including seeking health information, seeing a doctor or dentist for a general examination, immunization, exercising, proper diet, wearing a seat belt while driving, having healthy sex, and being sensitive to one's illness. Although health locus of control plays an important role in health behaviors [11], a review of the literature found no evidence of systematic review studies on the relationship between health locus of control and health behaviors. To this end, the present study aims to investigate the relationship between health locus of control and health behaviors.

2. MATERIALS AND METHODS

Search Strategy

The data in this systematic review were collected through electronically searching several databases including PubMed, Science Direct, Web of Science, Google Scholar, and Scopus from early April to early May 2021 using the keywords *Health Locus of Control* and *Health Behaviors*. The articles retrieved from the mentioned databases were compared with each other and duplicate articles were excluded. Finally, the results were presented in a set of tables.

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was used to evaluate the quality of the article's flow diagram. The retrieved articles were reviewed by two raters independently based on the inclusion and exclusion criteria. After excluding the articles that did not meet the inclusion criteria, the full texts of all articles that met the inclusion criteria were prepared and reviewed in this study. Then, the results of the reviews were used to select the articles based on the outcomes expected by the researchers. The intended outcome was the relationship between beliefs about health control and health behaviors (Fig. 1) (Table 1).

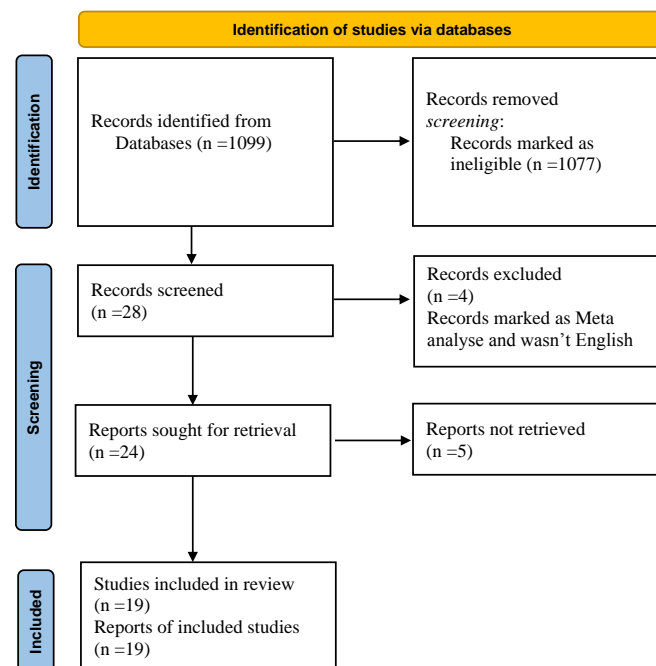


Fig. (1). PRISMA flow diagram: The process of reviewing and selecting articles based on inclusion and exclusion criteria.

Table 1. Search Strategy for All Databases.

| | |
|-----------------------------------|---|
| 1. Health Locus of Control | “Health locus of control” OR “Locus of Control” OR “Internal Health locus of control” OR “External Health locus of control” OR “Internal-external locus of control” |
| 2. Health Behaviors | “Health Behavior” OR “health behav*” OR health behaviors*, OR health behaviors change* |
| 3. Combined | #1 AND #2 |

The inclusion criteria

- **Type of studies:** Experimental, quasi-experimental, and descriptive interventional studies
- **The subject of studies:** Studies that addressed the relationship between health locus of control and health behaviors
- **Language:** Articles that were published in English
- **Study period:** All articles published until 2020.

The exclusion criteria

- Qualitative, review, replicate, structured review, and meta-analysis studies
- Articles published in non-English languages, abstracts, and summaries presented in conferences and seminars
- Theses and dissertations

Table 2. Characteristics of the studies reviewed in the systematic review.

| Name of First Author / Year of Publication / Place of Study | Purpose of the Study | Type of Study | Sample Size | Target Group | Intervention Results |
|---|--|------------------------|-------------|------------------------------------|---|
| Clark (2018) United State | A Longitudinal Study of Religiosity, Spiritual Health Locus of Control, and Health Behaviors in a National Sample of African Americans | Longitudinal study | 766 | African American adults | Results indicated that stronger religious beliefs and religious behaviors were associated with greater changes in active spiritual Health locus of control. There was some evidence of direct effects of religious beliefs and behaviors on changes in health behaviors. Religious behaviors were related to greater passive spiritual health locus of control over time across some health outcomes. Passive spiritual health locus of control. was associated with some less desirable health outcomes over time. |
| Debnam (2012) United State | Spiritual Health Locus of Control and Health Behaviors in African Americans | Cross-sectional survey | 2370 | African Americans age 21 and older | Results indicated that Active spiritual beliefs were positively associated with fruit consumption and negatively associated with alcohol consumption. Passive spiritual beliefs were associated with lower vegetable and increased alcohol consumption. Among male participants, passive spiritual beliefs were associated with higher alcohol consumption. |
| Holroyd (2001) Hong Kong | Filipino Domestic Workers in Hong Kong: Health Related Behaviors, Health Locus of Control and Social Support | Cross sectional survey | 290 | female Filipino domestic helpers | The results showed a positive relationship between health control belief and health behaviors such as reducing alcohol consumption, diet and reducing nicotine and coffee consumption. |

Ethics Statement

This paper is a systematic review; therefore, it did not require ethical approval.

3. RESULTS

In this study, 1099 articles were retrieved based on the titles and abstracts. A total of 1071 articles were excluded because they did not meet the inclusion criteria set in this study. Thus, 28 articles were reviewed. However, one meta-analysis study and 3 articles were excluded because they were not published in English. Accordingly, 24 articles were carefully reviewed. Out of 24 articles, 3 articles that were dissertations and 2 articles whose full texts were not available were excluded. Finally, 19 articles [2, 12 - 29] were included in the systematic review (Table 2).

Table 2 presents a summary of selected articles with details of authors' names, the year, time, and place of the study, the objectives, the target group, the sample size, and the study results:

3.1. Publication Bias

There was significant publication bias as evidenced by funnel plot asymmetry or the Egger test (P = 0.32). Therefore, it indicates that the studies with a small sample size had a low chance of publication (Fig. 2).

(Table 2) contd.....

| | | | | | |
|---------------------|--|---|-------|---|---|
| Kennedy (1991) | The Relationship between Radon Knowledge, Concern and Behavior, and Health Values, Health Locus of Control and Preventive Health Behaviors | Cross sectional survey | 300 | Homeowners in a high-risk community with high concentrations of radon in the home | The results showed that people who believed in high internal health control had higher radon-preventive behaviors |
| Kurowska 2012 | Health behaviors and health locus of control in patients diagnosed with arterial hypertension | Cross sectional survey | 97 | people with diagnosed hypertension | Results Individuals with an external locus of control have better health habits, are more interested in prevention, have more positive attitude and pay more attention to health practices than those with internal health locus of and people who deem that destiny is responsible for their health. |
| Słopiecka, 2019 | Relationship between health related locus of control and health behaviour among university students | Diagnostic survey | 360 | Students 19-55 years | Students who believed in higher internal control had fewer health problems, and those who believed in controlling their health by others were more likely to follow doctors' advice. |
| Mccucker 1997 | The relationship of health locus of control to preventive health behaviors and health beliefs | quesiexperimental | 404 | Teachers and administrators | The results of this study did not show a relationship between health locus of control and cancer prevention behaviors, but there was a relationship between health belief and health locus of control |
| Merce 2018 | Health Locus of Control Is Associated With Physical Activity and Other Health Behaviors in Cardiac Patients | Cross-sectional Mechanisms and Longitudinal | 599 | Cardiac patient's | The results showed that people with internal health locus of control believed in more physical activity. But there was no association with reduced alcohol consumption. Also, people who believed in luck had lower levels of physical activity in their spare time and more smoking, and finally less on the advice of a doctor. |
| Norman 1995 | health locus of control and health behaviour: an investigation into the role of health value and behaviour-specific efficacy beliefs | Cross sectional | 107 | adults aged between 18 and 82 years. | The results showed that there was a negative correlation between internal health locus of control and smoking status, such that smokers were found to have stronger internal health locus of control beliefs than non-smokers. |
| Norman 1998 | Health Locus of Control and Health Behaviour | Analytical descriptive | 13045 | adults aged between 18 and 64 years. | In this study, the relationship between behaviors such as no smoking and alcohol, diet and physical activity with the belief in health control was assessed. The results showed that there is a positive relationship between these behaviors and the belief in higher internal health locus of control. It was also negatively associated with belief in the control of health by others and luck. |
| Peker 2011 | Oral health: locus of control, health behavior, self-rated oral health and socio-demographic factors in Istanbul adults | Cross sectional | 1200 | adults aged ≥18 years | The results showed that people who believed in higher internal health locus of control had health behaviors, including daily brushing and regular dental examinations, and were less likely to engage in behaviors. |
| Pourhoseinzadeh2017 | The Relationship between Health Locus of Control and Health Behaviors in Emergency Medicine Personnel | cross-sectional descriptive study | 215 | emergency medical personnel | We found no significant relationship between health locus of control (external and internal) and health behavior |
| QUADR 1989 | Health Promotion, Health Locus of Control, and Health Behavior: Two Field Experiments | Longitudinal study | 1022 | students | The results showed that after the distribution of information booklets, people who believed in higher internal health control had more health information. Also, the belief of health control showed a correlation with advertising messages to promote breast self-examination. |

(Table 2) contd.....

| | | | | | |
|----------------------------|---|------------------------|-----|-------------------------------|---|
| WURTELE 1985 | Relationships between Locus of Control, Health Value, and Preventive Health Behaviors among Women | descriptive | 214 | Students 17 to 35 years old | The results of this study did not show an association between health locus of control and preventive health behaviors |
| Zielińska-Więczkowska 2016 | Relationships Between Health Behaviors, Self-Efficacy, and Health Locus of Control of Students at the Universities of the Third Age | Analectic descriptive | 320 | students | The results showed that there is a relationship between self-efficacy and health behavior and the dimensions of health control belief except chance. Also, the scores of external health locus of control and chance increased with age. |
| Zindler-wernet 1987 | Health locus of control and preventive health behaviors | Analectic descriptive | 123 | Employees | The results showed that there was a weak relationship between luck and health locus of control by others with a history of preventive health behaviors and there was no difference between groups in terms of belief in internal health locus of control and health behavior. |
| Cassidy 2017 | Family Health Culture, Health Locus of Control and Health Behaviours in Older Children | cross-sectional survey | 273 | older children, aged 16 to 18 | The results show that regular breakfast consumption, family health culture, family encouragement for personal growth, and internal health locus of Control are all significant predictors of adolescent health behaviors. |
| Joni Marr 2015 | Self-efficacy and social support mediate the relationship between internal health locus of control and health behaviors in students | Analectic descriptive | 837 | students | The results of the study showed that self-efficacy and social support mediated the relationship between belief in health control and physical activity, consumption of fruits and vegetables, and in the case of dietary fat intake, only self-efficacy mediated behavior. |
| Staniszewska 2017 | Health behaviors and health locus of control in patients with epilepsy | prospective study | 196 | epileptic patients | The internal dimension of health control showed a strong significant correlation with the following categories: health behaviors, proper nutrition habits and positive psychological attitude. The external dimension of health control showed a low significant correlation with health behaviors and prophylactic behaviors |

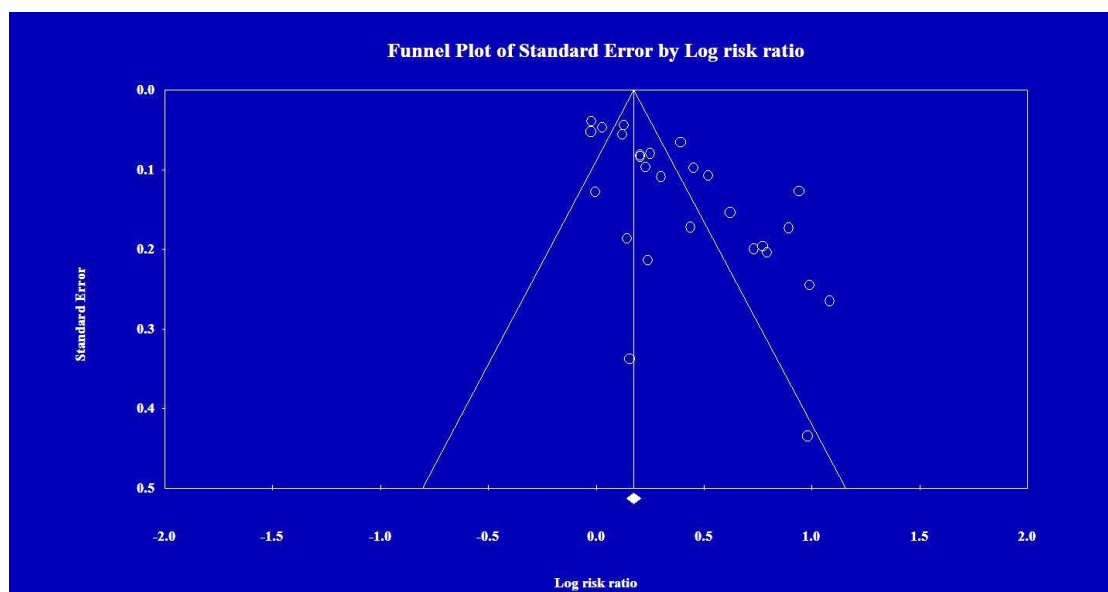


Fig. (2). Published studies of publication bias.

4. DISCUSSION

This study aimed to investigate the relationship between health locus of control and health behaviors. The results showed that people who have an internal locus of control were more likely to engage in health behaviors. These people also tend to believe that the outcomes of their actions are the results of their own abilities and their health is directly influenced by their actions and behaviors. Health locus of control is recognized as an effective variable in the development of health behaviors and therapeutic capacity and explanation of health problems. This scale is very important in health promotion and health education and can be used in health planning. Health locus of control internal is positively associated with awareness and attitude, psychological status, health behaviors, and better health and hygiene. In contrast, most external sources of health restraint (especially, powerful and influential people) are associated with negative health behaviors and poor psychological status. So, people who have an external locus of control often believe that the things which happen in their lives are a result of external factors, such as fate, luck, and the influence of powerful others such as doctors [8].

A review of the studies in the corpus showed that people who believe they can play a role in controlling and preventing diseases tend to engage in behaviors such as changing their diet, following a healthy diet, and doing exercise to improve their quality of life. These studies also showed that people with an internal locus of control are less likely to consume alcohol and engage in other unhealthy behaviors [11]. These people often make choices that usually involve regular planning in all aspects of life so that they can determine their own destiny. Believing in their fundamental impact on their health, these people engage in health-related behaviors. They also perform regular physical activity to prevent diseases and try to adjust their diet to avoid diseases. They also consider the stresses exposed to them during life as a result of their actions and lifestyle, so they use a stress management program to reduce life stresses [5].

Norman's study on a large population of people found that people who had an internal locus of control were more likely to report health-promoting behaviors such as physical activity and a balanced diet. They also reported unhealthy behaviors such as smoking and alcohol consumption less frequently. Health behaviors were negatively associated with health locus of control by others and luck, as confirmed by the data in the present study [22]. They also found that people with an external locus of control consider their health is dependent on factors such as fate, luck, and doctors and they are not interested in engaging in healthy behaviors.

Grotz *et al.* [30] surveyed the German adult population and reported that people who received higher scores in external locus of control (chance) were engaged less frequently in doing exercise and physical activity and had poor oral and dental health. Holm's study on health beliefs, health locus of control, and mammography behavior in women showed that the health locus of control was not a predictor of mammography behavior [31]

In their study on health locus of control and health behaviors in 18 European countries, Steptoe and Wardle showed that people with higher scores on the internal health locus of control reported higher rates of health behaviors than those with lower scores on this component. Besides, higher scores of the health locus of control were associated with a decrease in health-related behaviors [32], which was consistent with the results of the present study.

The health locus of control is recognized as a variable affecting the development and promotion of health behaviors. It is positively associated with awareness and attitude, psychological status, health behaviors, and better health and sanitation standards. In contrast, most external loci of health control (especially powerful others, fate, and luck) are associated with negative health behaviors and poor psychological status. Schwartz showed that an internal locus of control is effective in disease prevention and life expectancy [33].

With any systematic review study, there are a number of sources of bias that impact the results of the meta-analyses. The first one is whether all relevant articles were identified. Although this is unknown, we believe that we have identified the key published articles. The second source of bias is publication bias. This is a major concern in all the systematic reviews because studies reporting significant or positive findings are more possible to be published. The third source of bias is heterogeneity. The heterogeneity of the studies was evaluated using the χ^2 test. Given the differences in study groups, sample size, ethnicity, and culture distribution of cases, some degrees of heterogeneity are to be expected.

The main limitation of the present study was the unavailability of the full text of some articles. Thus, the authors reviewed only available and highly-cited articles.

CONCLUSION

Following the results of this study, it is essential to focus on people's beliefs about the influence of internal factors and increasing awareness about people's abilities to promote their health behaviors.

LIST OF ABBREVIATIONS

PRISMA = (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

POLICY IMPLICATIONS

Increasing people's awareness by using appropriate educational methods in the field of determinants of their health and empowerment and creating positive beliefs in the field of health in order to strengthen the internal control center of health and increase promotional behaviors.

AUTHORS' CONTRIBUTIONS

Mahdi Moshki and Mitra Dogonchi were involved in the conception and design. Mitra Dogonchi and Fatemeh Mohammadzadeh contributed to the collection and assembly of data. Mitra Dogonchi was involved in manuscript writing. All authors approved the final manuscript.

CONSENT FOR PUBLICATION

Not applicable.

STANDARDS OF REPORTING

PRISMA guidelines has been followed.

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None.

CONFLICT OF INTEREST

The authors declare no conflicts of interest, financial or otherwise.

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SUPPLEMENTARY MATERIAL

PRISMA checklist is available as supplementary material on the publisher's website along with the published article.

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