EVALUATION OF AFFECTING FACTOR IN HEALTH PROMOTING HOSPITAL: SYSTEMATIC REVIEW AND META-ANALYSIS

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Abstract
It is important to develop a new concept of Health Promotion Hospital (HPH) because of the necessity for adjustments and revisions to hospital health promotion (HP) services alongside therapeutic treatments. This is a comprehensive and meta-analytic study to determine the correlation of influencing factors in hospital health promotion implementation during the previous 20 years. This comprehensive investigation was carried out in accordance with the Systematic Review and Meta-Analysis (PRISMA) guidelines for reporting items. Outcomes evaluated in this study included estimated factor in affecting health promotion in hospital. The mean difference (MD) of continuous data was used to pool the data. 9 studies were chosen for meta-analysis. Because of the substantial variability in both categories, a random-effect model of analysis was used. Leadership, Policy and Strategy, People, Partnership and Resource, Processes, Patient Results, Staff Results, Society Results, and Communication were the factors affecting in health promoting hospital. Leadership, Policy and Strategy, People Partnership and Resource,
Processes, Patient Results, Staff Results, and Society Results all had a substantial impact in affecting and improving health promotion in hospitals.

**Keywords:** Health promoting hospital, affecting factor, Meta-Analysis

**Introduction**

Because of the necessity for adjustments and revisions to hospital organizational processes, as well as the inclusion of health promotion (HP) services alongside therapeutic treatments. It is important to develop a new concept of Health Promotion Hospital (HPH) due to the continuously changing internal and external environment of the hospital. (Yaghoubi et al., 2018) Hospitals according to WHO (World Health Organization) are an integral part of health service facilities which have the obligation to provide complete health services ranging from curative, rehabilitative, preventive to promotive (World Health Organization, 2018) The benefits of implementing Health Promoting Hospital include being able to provide a good impact on increasing literacy, satisfaction and health status of patients, the surrounding community and hospital staff as well as providing high quality and safe services. (Paterick et al., 2017) In addition, it can reduce the incidence of readmission rate in the hospital. Conversely, if it has not been implemented, the community will lose their right to receive balanced health information and education. (Janssen et al., 2014)

Health promotion at the hospital also aims to increase patient, family, and visitor awareness and interest in playing a constructive part in illness cure and prevention activities. The goal of a Health Promoting Hospital (HPH) is to improve the knowledge, attitudes, and behavior of Hospital patients while also maintaining the Hospital environment and making the best use of the services given by the Hospital. (Wartiningsih et al., 2020) Thus the implementation of HPH is very important because it is not only beneficial for patients to encourage healthy behavior, prevent patients from re-treatment and also maintain the patient's quality of life, but this program can also improve the health status of the Hospital staff so that it has an impact on increasing productivity and quality of work of staff due to reduced absenteeism. (Young, 2014)

HPH program implementation is expected to reduce treatment costs and increase patient satisfaction. HPH implementation has not been optimal due to the low knowledge of hospital staff about the HPH concept. In addition, communication between officers has not been well established, causing various obstacles in HPH implementation. (Sadeghi et al., 2021) One of the obstacles often faced by most hospitals is the absence of special staff to run various HPH programs. On the other hand, most hospitals give double duty to the HPH division in the form of marketing the hospital. (Barmo et al., 2020) This is a comprehensive and meta-analytic study to determine the correlation of influencing factors in hospital health promotion implementation during the previous 20 years.

**Methods**

In June 2023, a systematic review and meta-analysis were conducted following PRISMA guidelines to explore factors influencing the implementation of health promotion in hospitals. Various internet resources, including Science Direct, PubMed, Cochrane Library, ProQuest, and Google Scholar, were utilized for the study. The eligibility criteria focused on real-world studies within the last twenty years, with preference given to high-quality research based on risk of bias evaluation. The search strategy incorporated keywords like "health promotion in hospital," "HPH," "health
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promotion," or "hospital’s health promotion," combined with terms like "Implementation Factor" or "factors" or "affecting factors" or "contribution factors." The statistical analysis involved the use of the Newcastle-Ottawa Scale for Retrospective Studies, and outcomes were assessed through mean differences (MD) in continuous data. Heterogeneity was evaluated using the I2 statistic, and a random-effects model was employed for significant heterogeneity. The entire meta-analysis utilized Review Manager version 5.4 and Comprehensive Meta-Analysis version 3.0, declaring statistical significance at a p-value of 0.05. The outcomes focused on estimating factors affecting health promotion in hospitals.

Results and Discussion

Figure 1 depicts a search flow diagram. Following the screening of 163 titles and abstracts, 84 studies were accessed for full-text eligibility. In total, 9 studies were chosen for meta-analysis.

![Flowchart of the PRISMA Screening Criteria and Included Studies](image)

Table 1 presents a summary of the included studies, including country, study design, demographic target, implementation, and study outcome. Four studies (Figure 2) including 723 individuals were divided into case groups (n = 453) and control groups (n = 270) to determine the impact of leadership on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Pooled analysis in Fig. 2 showed that the studies included had a high heterogeneity (I2 = 78%) and there was a significant association between leadership in affecting the health

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promotion of hospital (MD 0.31, 95% confidence interval [CI] 0.14 to 0.70, p 0.004). These included studies carried out in Greece (n=1), Taiwan (n=2), and Iran (n=1).

![Forest Plot and Funnel Plot of Leadership](image)

**Figure 2. Forest Plot and Funnel Plot of Leadership**

Seven studies (Figure 3) including 2100 individuals were divided into case groups (n = 1324) and control groups (n = 776) to determine the impact of policy and strategy on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 3 revealed that the included studies were highly heterogeneous (I² = 97%) and there was a significant association between policy and strategy in affecting the health promotion of hospital (MD 0.16, 95% confidence interval [CI] 0.05 to 0.54, p 0.003). These included studies carried out in Taiwan (n=2), and Iran (n=3), England (n=1), Austria (n=1).

**Table 1**

<table>
<thead>
<tr>
<th>Factors Influencing Implementation and Development HPH</th>
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<td>Factors influencing HPH deployment and development</td>
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<td>Journal Country</td>
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<td>Study</td>
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<tr>
<td>Rothlin et al. 2015</td>
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<td>Röthlin et al. 2015</td>
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<td>Groen et al. 2010</td>
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<td>Tountas et al. 2004</td>
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<td>Afshari et al. 2016</td>
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<td>Barmo et al. 2020</td>
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<td>Svane et al. 2021</td>
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<td>Askari et al. 2022</td>
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et al., 2022)

Wang et al. 2019 (Tai Wang et al. 2019)

Table 2
Characteristic of the Studies

<table>
<thead>
<tr>
<th>Journal Country</th>
<th>Study Design</th>
<th>Population target</th>
<th>Implemented Events/Total</th>
<th>Not Implemented Events/Total</th>
<th>Outcome of the study</th>
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<tbody>
<tr>
<td>Rothlin et al., 2015 (Rothlin et al., 2015)</td>
<td>Before-After Study</td>
<td>159 acute care hospitals</td>
<td>144 154 11 154</td>
<td></td>
<td>Organizational capacity structures are critical for hospital health promotion. Guideline and stakeholder components in hospital determined the HPH. Staff training in HPH, cooperation and partnership development, employee motivation, establishing a healthy work environment, and integrating the HP concept to day-to-day work are all examples of HPH activities. The most significant aspect of the suggested conceptual model for building an</td>
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<td>Groene et al., 2010 (Groene et al., 2010)</td>
<td>Cross Sectional</td>
<td>38 hospitals</td>
<td>28 38 10 38</td>
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<td>Tountas et al., 2004 (Tountas et al., 2004)</td>
<td>Before-After Study</td>
<td>Doctors, nurses, psychologist and medical students</td>
<td>38 44 2 10</td>
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<tr>
<td>Yaghoubi et al., 2015 (Yaghoubi)</td>
<td>Cross Sectional</td>
<td>Managers, Medical and nurses</td>
<td>262 265 3 265</td>
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<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Study Type</th>
<th>Sample Description</th>
<th>Results</th>
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</table>
| Afshari _et al._, 2016| Cross Sectional       | Faculty member     | HPH was community evaluation. To increase the quality of health care, it appears beneficial to encourage legislators and health-care management to develop consistent policies and recommendations in HPS. Communication variables, resources, and dispositions (attitudes) all have an impact on the execution of health promotion hospital programs. The operational program improved implementation by identifying lifestyle risks, providing CHP services, and adhering to standards. The impact of cardiac patient education on their ability to implement the HPH.

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The self-assessment form is valid and can be used as a model in other countries with hospitals dedicated to health promotion. | 6 9 3 9 |
| Barmo _et al._, 2020| Cross Sectional       | 9 educational hospitals | |
| Svane _et al._, 2021| Randomized controlled trial | All clinical hospital department | 134 145 65 136 |
| Askari _et al._, 2022| Before-After Study    | Cardiac patients    | 31 6 31 |
| Wang _et al._, 2019| Cross Sectional       | doctors, nurses, midwives, and hospital officers in charge of | 37 40 5 40 |
Figure 3. Forest Plot and Funnel Plot of Policy and Strategy

Seven studies (Figure 4) including 1767 participants were divided into case groups (n = 1203) and control groups (n = 564) to determine the impact of people on hospital health promotions. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 4 revealed that the included studies were highly heterogeneous (I² = 91%) and there was a significant association between people in affecting the health promotion of hospital (MD 0.16, 95% confidence interval [CI] 0.06 to 0.44, p = 0.003). These included studies carried out in Taiwan (n=1), and Iran (n=2), England (n=1), Austria (n=1), Indonesia (n=1), Greece (n=1).
Five studies (Figure 5) including 1643 people were divided into case groups (n = 1103) and control groups (n = 540) to determine the influence of partnership and resources on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 5 revealed that the included studies were highly heterogeneous (I² = 97%) and there was a significant association between partnership and resources in affecting the health promotion of hospital (MD 0.15, 95% confidence interval [CI] 0.02 to 1.03, p 0.05). These included studies carried out in Taiwan (n=2), and Iran (n=1), Indonesia (n=1), Greece (n=1).
Figure 5. Forest Plot and Funnel Plot of Partnership and Resources

Five studies (Figure 6) including 1178 people were divided into case groups (n = 740) and control groups (n = 438) to determine the impact of processes on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 6 revealed that the included studies were highly heterogeneous (I² = 93%) and there was a significant association between processes in affecting the health promotion of hospital (MD 0.28, 95% confidence interval [CI] 0.10 to 0.74, p 0.01). These included studies carried out in Iran (n=1), Indonesia (n=1), Greece (n=1), England (n=1), Taiwan (n=1).

Seven studies (Figure 7) involving 1399 individuals were divided into case groups (n = 879) and control groups (n = 520) to determine the impact of patient outcomes on hospital health promotions. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 7 revealed that the included studies were highly heterogeneous (I² = 92%) and there was a significant association between patient results in affecting the health promotion of hospital (MD 0.24, 95% confidence interval [CI] 0.11 to 0.52, p 0.0003). These included studies carried out in Iran (n=2), Greece (n=1), England (n=1), Taiwan (n=2), Austria (n=1).
Figure 7. Forest Plot and Funnel Plot of Patient Results

Three studies (Figure 8) including 1066 participants were divided into case groups (n = 652) and control groups (n = 414) to determine the impact of hospital staff results on health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 8 revealed that the included studies were highly heterogeneous (I² = 96%) and there was a significant association between staff results in affecting the health promotion of hospital (MD 0.24, 95% confidence interval [CI] 0.06 to 0.89, p 0.03). These included studies carried out in England (n=1), Taiwan (n=1), Austria (n=1).
Six studies (Figure 9) including 1625 people were divided into case groups (n = 1075) and control groups (n = 550) to calculate the impact of societal outcomes on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 9 revealed that the included studies were highly heterogeneous (I² = 92%) and there was a significant association between society results in affecting the health promotion of hospital (MD 0.14, 95% confidence interval [CI] 0.04 to 0.44, p 0.0008). These included studies carried out in Iran (n=2), Greece (n=1), England (n=1), Taiwan (n=1), Austria (n=1), Greece (n=1).
Three studies (Figure 10) including 1046 individuals were divided into case groups (n = 727) and control groups (n = 319) to determine the impact of communication on hospital health promotion. Because of the substantial variability in both categories, a random-effect model of analysis was used. Figure 10 revealed that the included studies were highly heterogeneous ($I^2 = 96\%$) and there was an insignificant association between communication in affecting the health promotion of hospital (MD 0.10, 95% confidence interval [CI] 0.01 to 1.13, p 0.06). These included studies carried out in Iran (n=2), Indonesia (n=1).

Discussion

This study investigated factors affecting HPH implementation and development in 9 scientifically published papers. Most of the studies were cross sectional study, before after study, and randomized control trials study. According to the findings, there were certain issues with HPH implementation, such as a lack of knowledge of the HPH, as well as a lack of financial resources, leadership, policy and strategy, human resources or people, partnership, processes such as program evaluating and monitoring, collaborating in patient, staff, and community, also communication.

The issues involving managerial staff attitudes toward health-promoting hospitals is leadership. (Worringer et al., 2020) The hospital’s chief executive officer should propose and implement health-promoting initiatives for patients, patient’s families, staff, and the communities. (Ghiasipour et al., 2017) The participation and assistance of hospital leaders appear to be necessary in the health-promoting hospital implementation process. (Bokhour et al., 2018) Establishing a holistic health-promoting hospital approach
that includes project management and organizational growth necessitates the presence and support of leadership. (Akerjordet et al., 2018) One reason for managers' reluctance to implement HP projects is that they are not immediately profitable. As a result, the hospital's CEO does not emphasize these tasks in the hospital's operational programs. (Yaghoubi et al., 2018)

It may be stated that, in addition to the support of leaders for the creation of a health-promoting hospital, organizational support through the development of health-promotion strategies and money are also required. (Kruk et al., 2018) To develop a complete health-promoting hospital approach, hospitals should incorporate health-promoting aims, values, and principles into their vision and mission statements. (MULIANINGSIH, 2023) These elements are significant in policy and strategy criteria. For health promotion implementation, two primary strategies are advocated. There is the creation of financial management and budgeting strategies, as well as the distribution of resources from local communities or non-governmental organizations (NGOs) to meet a financial shortfall. (Yaghoubi et al., 2018) Certainly, the Integration Model will help to develop the strategies in implementing health promotion of hospital. A previous study investigated 52 health promotions and focused on policy formulation for the establishment of health promotion in Taiwan hospital including embodying health promotion in its goals and mission, government financial support, development of committees health promotion task force, health promotion resources and policies, lack of health promotion insurance coverage, inconsistency of government health promotion policies, and opposition to change in hospitals. (Wang et al., 2019)

The other factor is human resources (people). Employee commitment and participation in health promotion programs is the key to a comprehensive health promotion program in the hospital. (Ghiasipour et al., 2017) Hospitals should assign qualified and specialized staff to health promotion programs, train dedicated staff to implement health promotion programs, and review health promotion programs to ensure that they are perform well. Professional health workers need regular training, especially in communication and teaching skills. (Rosen et al., 2018) In terms of patient needs assessment and diagnostic teams, providing clear and relevant information to patients, and providing follow-up healthcare and post-discharge rehabilitation, this fundamental element of empowering patients, staff, and communities to establish and develop health promotion is emphasized in all articles reviewed. (DeSai et al., 2021) Furthermore, staff members are the ones who deliver health-promoting hospital to patients, and both the health and competences of staff and management have been linked to the implementation of health-promoting hospital. Staff shortages in health-promoting hospital competencies are another major impediment to actually delivering services. (Quirk et al., 2018) Improving both competences and lifestyle risks among employees and managers appears likely to lessen barriers to health-promoting hospital implementation. (Wang et al., 2019)

Collaboration and resources, another influencing aspect is criteria, which often relates to long-term relationships with suppliers, product support from suppliers, and lowered consumption of financial and physical resources. (Alderwick et al., 2021) A lack of proper knowledge of the concept of a health-promoting hospital, insufficient funds, and a lack of people, time, and skills in the field of health promotion programs are all extremely effective and can be barriers to establishing a health-promoting hospital. (Afshari et al., 2016) Attracting community involvement and groups outside of the hospital is critical to the success of health promotion. As a result, a study in Taiwan
discovered that insufficient support from the hospital's external environment can be a barrier to health promotion in hospital. (Svane et al., 2018)

Although in this study it was found that there was no significant effect on communication in creating a good health promoting hospital, previous research stated that the impact of communication on health promotion implementation because communication is a crucial aspect in hospital health promotion implementation. (Barmo et al., 2020) The goal of communication is to ensure that the health promotion is well received by patients, their families, and hospital staff. (Kusumaningrum et al., 2021) Despite the support and commitment of good implementers, other factors such as insufficient resources, a lack of communication among stakeholders involved in health promotion hospital activities, and attitudes toward this concept and its influence can all have an impact on its implementation. (Crable et al., 2020) Communication, such as meetings or stakeholder gatherings, is required to maximize health promotion hospital planning and assessment by incorporating many disciplines so that strategies can be optimized. For implementation, several health promotion hospital methods are developed and it is important to build a practice guidelines of HPH activities. (Pereira et al., 2022)

**Conclusion**

There was a substantial association between Leadership, Policy and Strategy, People Partnership and Resource, Processes, Patient Results, Staff Results, and Society Results in effecting and increasing health promotion in hospitals, according to this meta-analysis. In this study, communication shows a negligible correlation.
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