

# UTILIZATION OF INFORMATION TECHNOLOGY IN PREVENTION OF DEPRESSION IN OLDER ADULTS

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## ABSTRACT

Depression is a problem that often occurs in older adults population. The use of technology in the implementation of health services has succeeded in increasing the effectiveness and quality of providing health services to patients. Several mobile apps that have been available have the potential to improve services for people with depression. The purpose of this study was to determine the use of information technology in preventing depression in older adults. This study uses a simple literature study method based on a specific theme from several databases including the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, and SAGE between 2014 and 2020. 27 journal articles that met the inclusion criteria passed the screening process using the PRISMA diagram. Research showed positive results in the use of technology for depressive conditions experienced by the older adults. The importance of developing health applications in order to keep up with the conditions needs to be the attention of health workers. Easy, inexpensive, and attractive health applications can increase public curiosity and participation in the health sector.

## ABSTRAK

Depresi merupakan masalah yang sering terjadi pada populasi lanjut usia. Pemanfaatan teknologi dalam penyelenggaraan pelayanan kesehatan telah berhasil meningkatkan efektifitas dan kualitas pelayanan kesehatan kepada pasien. Beberapa aplikasi seluler yang telah tersedia berpotensi meningkatkan layanan bagi penderita depresi. Tujuan dari penelitian ini adalah untuk mengetahui pemanfaatan teknologi informasi dalam mencegah depresi pada lansia. Penelitian ini menggunakan metode studi kepustakaan sederhana berdasarkan tema tertentu dari beberapa database antara lain *Cumulative Index to Nursing and Allied Health Literature (CINAHL)*, *ProQuest*, dan *SAGE* antara tahun 2014 dan 2020. 27 artikel jurnal yang memenuhi kriteria inklusi lolos *screening*. proses menggunakan diagram PRISMA. Penelitian menunjukkan hasil positif dalam penggunaan teknologi untuk kondisi depresi yang dialami oleh lansia. Pentingnya pengembangan aplikasi kesehatan agar dapat mengikuti kondisi perlu menjadi perhatian tenaga kesehatan. Aplikasi kesehatan yang mudah, murah, dan menarik dapat meningkatkan rasa ingin tahu dan partisipasi masyarakat di bidang kesehatan..

## ARTICLE INFO

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## Pendahuluan

Depression is a problem that often occurs in older adults population, even though depression is not a normal part of the aging process. Important changes that occur in life as people aged can cause conditions of great discomfort, stress, and sadness. These conditions or what is often referred to as depression are active problems that most often arise in older adults (1). Depression in older people can be more difficult to monitor because they often show different symptoms than younger individuals.

Nearly 14% of older adults in the world are estimated to have clinical symptoms relevant to depressive conditions (2). The results of Indonesia's Basic Health Research (2018) for people aged > 15 years show that there are 706,689 (6.1%) people who experience depression, based on age characteristics, as many as 6.5% of the population aged 55-64 years, 8% of the population aged 65 -74 years, and 8.9% of the population > 75 years of age experiencing depression in Indonesia. In West Java Province there are 130,528 people (7.8%) of the population who experience depression (3), while in Depok City it is estimated that 51.6% of the population who visits psychology services

at community health center experienced psychosocial stress and 5.01 % experienced depression (4).

Health workers have an important role in the development of awareness and health of individuals and communities in dealing with older adults with depression. In the case of depression, the nurse has an important role as a case finder or discoverer of depression problems in older adults who is generally more introverted and does not have significant symptoms that can be seen directly. As a case finder, nurses must have the ability to assess and screen for depression status using various screening methods such as the Geriatric Depression Scale (GDS) and Depression, Anxiety, Stress Scale (DASS) both manually or using technological assistance.

The use of technology in the implementation of health services has succeeded in increasing the effectiveness and quality of providing health services to patients (5). Providing information technology-based services, especially in the form of mobile apps/cellphone applications, has become one of the most popular things since the emergence of the 4.0 technological revolutions. Regarding depression cases, several mobile apps that have been available have the potential to improve services for people with depression (6). The purpose of this study was to determine the use of information technology in preventing depression in older adults.

## Methods

This study uses a simple literature study method based on a specific theme. Based on search results from several databases including the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, and SAGE between 2014 and 2020, 27 journal articles that met the inclusion criteria passed the screening process using the PRISMA diagram (Figure 1). The keywords used were a combination of several words, including "depression", "mobile app", "older adult", and "Assessment". The total number of articles related to the keywords obtained was 1916 journal articles. The inclusion criteria included: (1) articles in English, (2) containing mobile app interventions for the older adults, (3) interventions in cases of depression, (5) including quantitative, qualitative research, or a combination of both. Meanwhile, the exclusion criteria included: (1) intervention for non-elderly depression and (2) intervention that was not given in cases of depression.

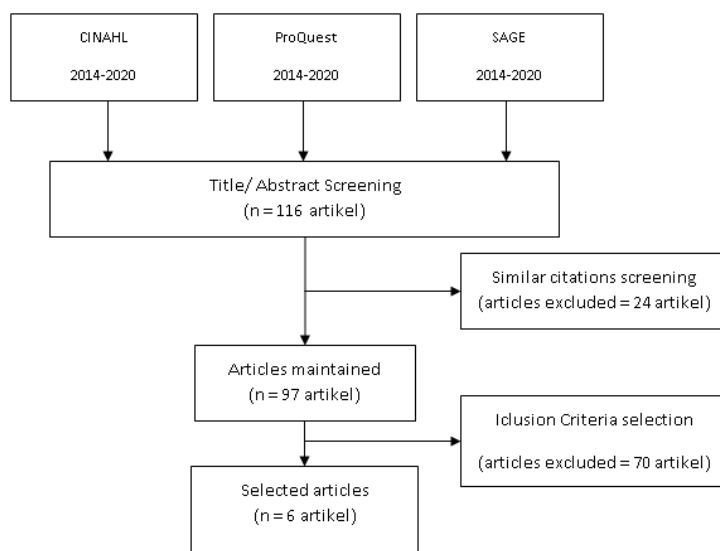


Figure 1. PRISMA Diagram

## Results

Researchers conducted a literature study on articles for 2014-2020 and produced 27 articles that showed positive results in the use of technology for depressive conditions experienced by the older adults, which included:

Table 1. List of Supporting Research

No	Platform Base	Supporting Research
1	Android/ Mobile App	(7); (8); (9); (10); (11); (6); (5); (12); (13); (14); (15); (16); (17); (18); (19); (20); (21)
2	Web based	(22)
3	Mixed	(23); (24); (25); (26); (27)
4	Tele-Health	(28)

## Discussion

Depression is a mental disorder characterized by various signs which include flat affect, loss of interest, decreased enthusiasm, low self-esteem, sleep disturbances, eating disorder to concentration problems where these symptoms must appear within 2 weeks (29). Depression is a major challenge worldwide with the effect of increasing personal, economic, and social costs significantly. The diagnosis of depression in the older adults is much more difficult than the other age aggregates. Elderly people who experience depression are less likely to show affective symptoms than younger generations. One of the most commonly used screening instruments to measure depression status in older adults and has proven efficacy includes the Geriatric Depression Scale (GDS)-15 (22). Older adults who experience depression has a tendency to experience a decrease in the quality of life both bio-psycho-social-spiritual. Depression risk factors that can affect older adults include social-economic factors, satisfaction with health services, poor family relationships, and perceptions of poor health.

Poor health perceptions in older adults directly indicate the negative functional consequences experienced by older adults. Functional consequences are effects that arise as a result of physical changes, risk factors, and health behavior of individuals or older adults that can be observed and affect the daily life of older adults. The functional consequences can be negative if the behavior shown by the individual increases the risk of dependence on the caregiver, while positive if the individual can be independent in carrying out his daily functions. Health behavior includes all interventions carried out by carers, families, and health workers, while risk factors can come from the external or internal environment of the individual (30).

The role of health perceptions in influencing the conditions of functional consequences in older adults can be seen in the theory of the Health Believe Model (HBM). HBM emphasizes perceptions and beliefs about diseases that affect the health behavior of older adults towards the disease, the perceptions of older adults towards the severity of the disease and barriers to accessing health services are crucial factors that affect older adults's desire to adapt depressive conditions (31). While the increase in the level of

understanding and knowledge of older adults about chronic disease conditions through the HBM approach is directly proportional to the willingness level of older adults to access health services, therefore it is highly recommended for health workers to use this approach as part of implementation for elderly health (32).

The period of the 4.0 technological revolutions, which encourages everyone to adapt according to the times, can be challenging for older adults who can experience difficulties taking part in it. The rapid growth in the use of technological devices, such as smartphones, tablet PCs, and smartwatches, has encouraged people to easily report health status without the need to come to health services. The various benefits of this communication technology include reducing errors in measuring health status, being able to cross the boundaries that arise due to the use of traditional technology (use of paper/web), making it easier for elderly people with psycho-social disorders to report health status (11).

Technology is the key to solving mental health care access problems in the 21st century. The biggest challenge we face in exploiting the possibilities of information technology in healthcare today is ensuring implementation that we do based on evidence-based. This means that innovation must be evaluated in a variety of contexts, including a design that is easy and acceptable to patients, improves patient access, minimizes costs, and maximizes clinical outcomes. In addition, technology must offer a viable way to provide specialized and high quality health services to elderly people who experience significant obstacles to access to care, such as those who live in remote or rural areas, experience limitations in transportation, or experience outpatient problems (25).

Cellular health interventions have experienced a surge in popularity, but their implementation varies widely and their effectiveness is still diverse (12). The application of health technology can make the lives of older citizens more comfortable and enable them to overcome the digital gap in society. Learning and understanding new technology not only expands the knowledge previously owned by older adults but also increases their self-esteem and their enjoyment of life (23).

The increasing need for mental health services in the population poses significant challenges for the health system. Therefore, it is important to identify new approaches in providing sustainable and measurable care in terms of scope and impact on health (15). In addition, the potential benefits of developing a mobile-depression screening application can be maximized based on the main features of the smartphone application such as storage, portable accessibility, and real-time notifications (11).

Tele-health is a very interesting new way to increase access and use of treatment by older adults. The need for increased attention from health workers to develop and implement effective, measurable and accessible interventions to reduce the morbidity of depression and improve the quality of life of older adults is still very much needed (28). Health workers have the ability to use and apply health technology based on mobile devices anytime and anywhere in order to increase knowledge, information, and abilities related to elderly health problems (5). Health workers need to know what applications are evidence-based and should be careful when recommending applications to patients (17).

Improved smartphone access allows for increased smartphone application development and use. Mobile health interventions that previously relied on voice or text-based short message services (SMS) are slowly changing due to increased availability and ease of



use of applications (24). A large number of mobile mental health applications are currently widely available to the general public, but current existing applications is still not very focused on the needs of health workers and patients (27).

The research results show that tablet computers and smartphones/mobiles that can access online applications have the greatest benefit in implementing community-based health monitoring (33). The use of Android applications on tablet computers or smartphones can reduce the research process time while ensuring public participation without the need for face-to-face processes. Mobile devices, such as smartphones and tablet computers, have made computing more accessible to users of all ages, and have increased access to free or low-cost user-friendly applications. The benefits include high data entry rate, low error rate, reduced data entry errors, and guaranteed confidentiality of responses. The confidentiality of responses has increased because members of the public cannot have access to participant responses and data is automatically encrypted and sent securely to a central server (7).

With various advantages, including a broader level of community access, depression management based on a mobile phone application has great potential in improving psychosocial health status in the community (16). Research shows that depressed elderly people have a tendency to withdraw from social relationships which can result in decreased access to health services (9). With the integration of health services in smartphone applications, there is a big possibility for older adults to continue to be monitored by health workers. Health workers who use health applications on smartphones need to be concerned, among others, that the effectiveness of the application may also depend on the characteristics of the patient population (18).

## **Conclusion**

Older adults have a higher tendency to experience depression as a result of various factors experienced. This condition, if not treated seriously, can reduce the quality of life of older adults in carrying out their daily activities. The high perception of health in the community that views depression as not a serious condition can exacerbate the negative functional consequences that will arise.

In the last few decades, the interest and use of smartphones have increased quite significantly. This has an impact on the change or transition of health care services from a manual and conventional approach to a more modern one by utilizing applications as a medium and a tool to reach society. The importance of developing health applications in order to keep up with the conditions needs to be the attention of health workers. Easy, inexpensive, and attractive health applications can increase public curiosity and participation in the health sector.

In maximizing the development of health applications, health workers need to pay attention to multidisciplinary integration with other general expertise so that the resulting application is able to answer health challenges and problems that arise in society. Another thing that is also important to remember is that the integration of applications with primary health care and hospitals is a must to do so that there is no perception that the management of psycho-social conditions is a separate thing from other health problems.

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