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ProstaCard: Developing Novel Interactive Tools for Patient Education and Decision-Making in Benign Prostatic Hyperplasia Management

Rauchsan Abdi Akbar[1], Muhammad Sultan Ardhi Pratama Firdausy[2], Pandu Ishaq Nandana[3], Lalu Muhammad Editia Subihardi[4]

[1] Medical Education Study Program, University of Mataram, Mataram, Indonesia.
[2] Department of Urology, RSUD Patut Patuh Patju, Mataram, Indonesia.
[3] Department of Urology, University of Mataram, Mataram, Indonesia.
[4] Department of Urology, Mataram City Hospital, Mataram, Indonesia.

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Abstract: Benign Prostatic Hyperplasia (BPH) presents significant challenges for patient comprehension and decision-making due to its intricate nature and the multitude of available treatment options. Educational interventions are increasingly acknowledged as effective means of addressing these challenges. This study focused on the development and assessment of 'ProstaCard', an interactive educational tool designed to enhance patient understanding of BPH and support informed decision-making in its management. The development of the tool involved a collaborative effort among urologists, game designers, and educators. The prototype was iteratively refined through an analysis of patient needs and feedback from healthcare professionals. To evaluate the tool's efficacy in enhancing patient knowledge and decision-making skills, a preliminary pre-test/post-test design was utilized. Both quantitative and qualitative data were gathered from patients and healthcare providers to assess the tool's impact. The results demonstrate that 'ProstaCard' substantially enhanced patients' understanding of BPH and their capacity to make informed decisions regarding treatment options. The tool successfully engaged participants in the educational process and facilitated dialogue between patients and healthcare providers. Nevertheless, additional research is required to investigate the long-term impact of the tool on patient outcomes and its potential integration into clinical practice. 'ProstaCard' shows potential as a novel educational tool for enhancing patient understanding and decision-making in the management of BPH. By offering an interactive and informative platform, the tool enables patients to engage more actively in their care, which may lead to improved treatment outcomes. Ongoing development and assessment of the tool are crucial to maximizing its effectiveness and applicability in clinical environments.

Keywords: Interactive Tools, Benign Prostate Hyperplasia, Education, Decision-Making

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Introduction

Benign Prostatic Hyperplasia (BPH) presents challenges for patient comprehension and decision-making due to its complexity and the variety of treatment options available. Educational interventions are increasingly acknowledged as valuable tools for addressing these challenges. According to WHO data from 2013, approximately 70 million cases of degenerative conditions, including BPH, are estimated globally. The incidence of BPH is reported to be 19% in

Email: arauchsan60@gmail.com

developed countries and 5.35% in developing countries. In Indonesia, as of 2013, there were 9.2 million cases of BPH, primarily affecting men over the age of 60. BPH is the second most prevalent urological disease in Indonesia, following kidney stones, with 9.2 million cases reported in 2016. Additionally, the incidence of BPH in Indonesian hospitals ranges from 24% to 30% of all urological cases treated. Historical data shows that from 1994 to 1997, Cipto Mangunkusumo Hospital reported 462 cases of benign prostatic hyperplasia. Hasan Sadikin Bandung Hospital recorded 1,185 cases from 1976 to 1985 and 1,038 cases from 1993 to 2002. Dr. Soetomo Surabaya Hospital documented 1,948 cases between 1993 and 2002, while Sumber Waras Hospital reported 602 cases during the same period (Griffin et al., 2020).

Benign Prostatic Hyperplasia (BPH) is characterized by difficulties in initiating urination and a sensation of incomplete bladder emptying. As the prostate gland enlarges, it exerts pressure on the urethra, leading to its narrowing and obstruction of urine flow. Consequently, the bladder must exert increased effort to expel urine, resulting in the enlargement and heightened sensitivity of the bladder muscles. This condition prevents the bladder from emptying completely, leading to frequent urges to urinate. Additional symptoms include a reduced urine flow (Nunes et al., 2017).

Preoperative mental preparation is essential for patients undergoing surgery, as anxiety often arises concerning injections, wound pain, anesthesia, and potential complications such as disability or death. For individuals with Benign Prostatic Hyperplasia (BPH), various surgical options are available, with one of the most commonly performed procedures being Transurethral Resection of the Prostate (TURP). This operation involves removing prostate tissue via the urethra using a resectoscope. The advantages of TURP include the absence of external incisions, which minimizes the risk of infection, enhances safety for high-risk patients, shortens the hospitalization and recovery periods, reduces the morbidity rate, and results in less postoperative pain (Suprapto et al., n.d.).

The term ‘serious games’ specifically denotes games that are purposefully designed for the serious objective of delivering health professions education through digital devices. In contrast, ‘serious diversion’ refers to the application of games initially created primarily for entertainment that are used as-is for health profession education through digital devices. Thus, the term ‘serious games’ encompasses all instances where digital games are utilized for health profession education, including both ‘serious games’ and ‘serious diversions’ (Gentry et al., 2019).

Serious gaming and gamification offer students the opportunity to engage in active learning, address clinical problems, and acquire experience within a risk-free environment, eliminating the need for patient involvement. These serious games create a low-stakes setting that allows for student experimentation and enhancement through repeated play. They have the potential to modify learner behavior and attitudes to support educational objectives and effectively convey educational content, thereby facilitating the learning process (Gentry et al., 2019). Serious games are available in various formats, though many share similar characteristics. The literature on medical education predominantly emphasizes digital games, often excluding tabletop games, such as card and board games, from the definition of serious gaming (Cosimini & Collins, 2023).

Nevertheless, prior to undergoing surgery, it is essential to provide mental preparation through interactive tools. Patient education regarding prostatic hyperplasia and available treatment options plays a crucial role in enhancing quality of life and facilitating informed decision-making. Currently, education for patients with prostatic hyperplasia is frequently conducted using traditional methods, such as printed materials or consultations with physicians. These approaches have notable drawbacks, including limited direct interaction between patients and doctors and a lack of comprehensive patient awareness about their condition. Serious games integrate engagement and entertainment with educational and psychological strategies to improve health outcomes. There is a broad range of serious health-related games designed for health education, physical therapy, psychological therapy, and the management of chronic diseases (van Gaalen et al., 2021).

Indeed, there are numerous instances where patient safety has been compromised during surgical procedures due to non-technical errors, such as communication breakdowns or poor situational awareness[11]. To enhance patient education and improve decision-making, the development of new interactive tools may offer a more effective solution. These tools can provide clearer and more engaging information, enabling patients to actively participate in decisions regarding their treatment (Reichlin et al., 2011).

In this study, we designed and assessed ‘ProstaCard’, an interactive educational tool intended to enhance patients' comprehension of Benign Prostatic Hyperplasia (BPH) and to support their decision-making processes concerning its management.

Method

The development process involved interdisciplinary collaboration among urologists, game designers, and educators. The tool's prototype was developed through an iterative process informed by patient needs analysis and feedback from healthcare professionals. To evaluate the tool's effectiveness in enhancing patient knowledge and decision-making abilities, an initial pre-test/post-test design was employed. Both quantitative and qualitative data were collected from patients and healthcare providers to assess the tool's impact (Sugiyono, 2018).

ProstaCard Game Design and Development

ProstaCard is an interactive tool developed to assist patients with Benign Prostatic Hyperplasia (BPH) in making decisions and managing their condition.

Basic Idea Development

Patients with Benign Prostatic Hyperplasia (BPH) require enhanced education about the disease, including guidance on avoiding medications that can lead to urinary retention, the use of herbal remedies, and the adoption of a low-fat, high-protein diet. Improved patient education is crucial for enabling more informed decision-making in the management of their condition.

ProstaCard aims to address this need by providing interactive tools designed to assist patients in making well-informed decisions regarding their treatment. Additionally, ProstaCard focuses on developing technology that supports both patients and healthcare providers. The interactive tools developed are intended to enhance patients' understanding of their condition and facilitate more informed decision-making. Furthermore, ProstaCard interactive tools are also designed to aid nurses in delivering better care to BPH patients by improving their understanding of the patient's condition and enhancing the effectiveness of care provided, as illustrated in the following image.

Figures 1. Answer cards and question cards.

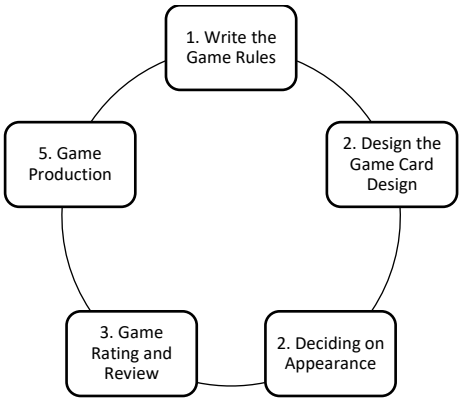

Figure 2. Steps to Designing a ProstaCard[7].

Discussion

The game aims to gauge user preferences concerning how medication side effects affect their desired quality of life. Adverse event scenarios are presented to users based on statistical probabilities derived from extensive, prospective, multi-regional studies (Reichlin et al., 2011).

ProstaCard offers several advantages for patients newly diagnosed with Benign Prostatic Hyperplasia (BPH). It provides comprehensive education about BPH, including guidance on avoiding medications that may lead to urinary retention, the use of herbal remedies, and the adoption of a low-fat, high-protein diet. This educational approach enhances patients' understanding of their condition and supports more informed decision-making regarding disease management. ProstaCard facilitates better-informed decisions about appropriate treatment, enabling patients to comprehend their condition more effectively and choose suitable management strategies (Mostowfi et al., 2016).

ProstaCard enhances patient knowledge about Benign Prostatic Hyperplasia (BPH), including its symptoms, diagnosis, and treatment. Improved knowledge enables patients to make more informed decisions and lowers the risk of complications[14]. By facilitating a better understanding of their condition, ProstaCard contributes to the improvement of the quality of health services received by patients. The tool also raises awareness about BPH, emphasizing the importance of adopting a low-fat, high-protein diet and avoiding medications that may cause urinary retention. Increased awareness enables patients to make more informed decisions and further reduces the risk of complications (Drummond et al., 2017).

The development of interactive tools for educating patients about Benign Prostatic Hyperplasia (BPH) may encounter several challenges. These include the necessity for technology that is both suitable and accessible to patients (Christian et al., 2017). Technological constraints can impede the creation of

effective interactive tools. Additionally, patients with BPH require improved education about the disease, including guidance on avoiding medications that may cause urinary retention, the use of herbal remedies, and the adoption of a low-fat, high-protein diet. Incorporating game elements into these tools could enhance attitudes and behaviors towards learning, thereby positively influencing learning outcomes. However, limited patient needs and resource constraints, such as costs, time, and labor, may present obstacles to developing interactive tools that meet patients' needs effectively (van Gaalen et al., 2021).

The findings indicate that 'ProstaCard' significantly enhances patients' knowledge about Benign Prostatic Hyperplasia (BPH) and their ability to make informed decisions regarding treatment options. This tool effectively engages users in the learning process and improves communication between patients and healthcare providers. Nevertheless, further research is required to examine the long-term effects of these tools on patient outcomes and their integration into clinical practice.

Consequently, the design and development of the ProstaCard game were conducted through systematic and structured phases to create a tool that effectively improves patient knowledge and decision-making skills in the management of benign prostatic hyperplasia (BPH).

Conclusion

"ProstaCard" shows potential as a novel educational tool for enhancing patient understanding and decision-making in the management of Benign Prostatic Hyperplasia (BPH). By offering an interactive and informative platform, the tool enables patients to actively participate in their care, which may result in improved treatment outcomes. Ongoing development and evaluation of the tool are crucial to maximizing its effectiveness and applicability in clinical settings.

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