Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 6, 4126-4135
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i6.2903

Drivers to utilise evidence-based practice among nurses: A study in tertiary military hospital in Saudi Arabia

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Abstract: Nurses' knowledge, facilitators, and barriers related to Evidence-based Practice (EBP) are among the main issues that may determine the readiness of nurses to practice EBP it in their clinical settings. To identify factors that facilitated or hindered the adoption of EBP and to evaluate nurses' readiness to implement EBPs for evidence-based decision-making. The quantitative study involved 300 nurses currently working in the organization studied and used Rogers' diffusion of innovation theory to evaluate the factors that promote or hinder the implementation of EBP in their work settings. The data were gathered using a questionnaire and has been analyzed descriptively and inferentially, specifically using one-way ANOVA and regression analysis. Simple regression analysis showed a significant link between nurses' knowledge of EBP and facilitating factors on their readiness to implement EBP. Multiple regression confirmed that knowledge of EBP significantly influences nurses' readiness. While job positions had an insignificant impact, years of experience moderately influenced EBP readiness, and higher qualifications were positively correlated with readiness. The moderating effect of facilitating factors or barriers was not significant. The findings suggest that nurses' readiness to implement EBP is more influenced by their knowledge of EBP than by the barriers they face or the facilitating factors they receive. Nurses' knowledge towards EBP are crucial in determining their readiness to implement EBP in the healthcare settings. Hence, the healthcare organizations should emphasize improving their knowledge and ability to evaluate evidence by providing adequate education, training and support, develop protocols and guidelines and to fortify EBP readiness.

Keywords: *EBP barrier, EBP facilitating factors, EBP knowledge, EBP readiness, Registered nurses, Saudi Arabia.*

1. Introduction

Evidence-based practice (EBP) is a structured approach to clinical decision-making that integrates the best available research evidence with clinical expertise and patient preferences. This methodology aims to enhance patient outcomes by incorporating the most current and relevant evidence into clinical practice (Barton et al., 2024). The implementation of EBP in nursing has the potential to significantly improve patient care, reduce hospital readmission rates, and lower mortality rates. Healthcare providers, particularly nurses, are increasingly required to develop EBP skills to practice effectively and deliver high-quality patient care.

Countries such as Spain, Ireland, Colombia, Chile, the United States, and the United Kingdom have seen a significant increase in the use of EBPs (Higgins et al., 2019; Ayoubian et al., 2020). EBP implementation, however, is still in its early stages in Middle Eastern countries, including Saudi Arabia. In Saudi Arabia, the integration of EBP in nursing practice encounters specific challenges due to diverse cultural and nursing practices. The presence of multicultural nurses from different backgrounds has led to inconsistencies in using EBP in nursing practice. Moreover, the lack of appropriate training and educational programs has intensified the issue (Alkhatib et al., 2021; Shayan et al., 2019). Many nurses rely on traditional methods or personal experiences rather than scientific evidence, resulting in negative attitudes towards EBP. Additionally, there is a lack of engagement among nurses at all levels in EBP,

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leading to missed opportunities to implement best practices and improve patient care. This disengagement can compromise patient safety, increase hospital costs, and add to nurses' workloads.

To address these challenges, it is crucial to assess nurses' knowledge and readiness to implement EBP. Identifying factors that hinder successful implementation can help enhance nursing practices and promote high-quality care in clinical settings. EBP readiness among nurses, such as lack of knowledge and skills, time and resource constraints, and insufficient support from colleagues and organizational leaders, is crucial. Providing nurses with the necessary knowledge, skills, resources, and support can enhance EBP readiness and improve patient outcomes. EBP training is essential for nurses to provide safe and effective patient care, stay up to date with the latest practices, and promote professional development (Rugs et al., 2020; Kumah et al., 2022). Organizations should invest in EBP training to improve patient outcomes and reduce healthcare costs (Jeong et al., 2024).

EBP is an approach that integrates research evidence, clinical expertise, and patient values to guide decision-making in healthcare. It aims to provide high-quality, safe care to patients and has been associated with improved outcomes, although some studies report mixed or negative results (Rugs et al., 2020). EBP implementation in healthcare settings, including acute care, critical care, and primary care, has been associated with better patient outcomes. Clinical guidelines, protocols, and decision-support tools help achieve reduced mortality rates, decreased length of hospital stays, and improved patient satisfaction. A systematic review by Barton et al., (2024) reported similar findings that EBP implementation improves patient outcomes, reduces complications and readmission rates, and increases satisfaction.

EBP positively impacts patient outcomes, hospital costs, and nurse job satisfaction. It has been shown to improve patient outcomes, decrease hospital costs, and enhance nurse job satisfaction (Melnyk et al., 2017). Nurses engaged in EBP can introduce best practices into nursing policies and procedures, thereby advancing the quality of nursing practice. Additionally, involvement in EBP promotes professional development and can lead to recognition and accreditation for healthcare organizations (Rugs et al., 2020; Kumah et al., 2022; Jeong et al., 2024). From the literature review, a research conceptual framework of this study is as presented in Figure 1. In general, the framework relates the readiness to practice EBP among nurses and demographic factors and knowledge towards EBP. In addition, in line with a study by Alqahtani et al. (2020), facilitators and barriers were included in the framework as a moderator that may influence the relationship between EBP's knowledge and readiness to implement the EBP.

To conclude, the implementation of EBP in nursing practice has the potential to significantly improve patient outcomes, reduce hospital costs, and enhance nurse job satisfaction. Overcoming barriers such as lack of time, resources, and organizational support is crucial for high-quality healthcare delivery in nursing clinical settings. Nurses must have research knowledge to critically evaluate the latest evidence-based research findings and effectively implement best practices. Providing nurses with proper training and education in research methods and techniques is vital to overcome these barriers. This can improve the quality of healthcare services delivered to patients and ensure effective implementation of EBP.

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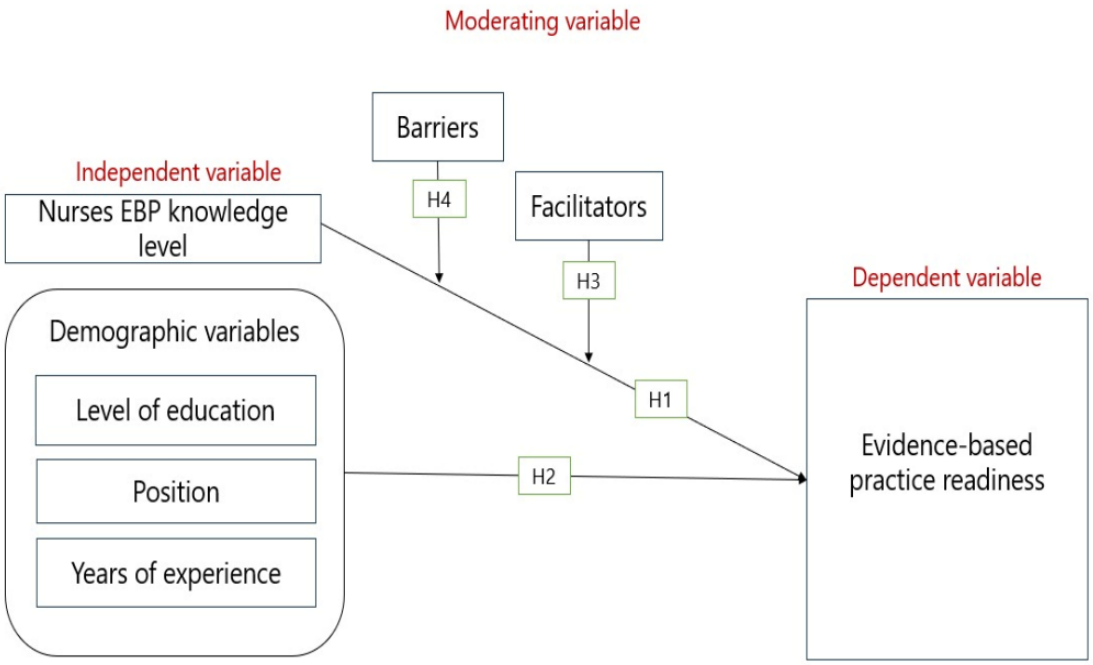

Figure 1.
Research conceptual framework.

H_1: The nurses' level of knowledge about EBP influences their readiness to apply EBP; H2: There is a significant association between demographic characteristics (job positions, years of working experience and level of education) and the readiness towards EBP; H3: There is a moderating effect of facilitating factors on the relationship between the level of EBP's knowledge and the readiness to implement EBP among nurses; H4: There is a moderating effect of barriers on the relationship between the level of EBP's knowledge and the readiness to implement EBP among nurses.

2. Methods

This is a quantitative study where the primary data were collected through questionnaires from all staff nurses in the organisation studied that provide direct and non-direct patient care. The organisation involved in this study qis a government tertiary-military specialized cardiac centre in Riyadh, Saudi Arabia. The chosen hospital is pursuing MAGNET recognition from the American Nurses Credentialing Center (ANCC) for nursing excellence and high-quality patient care (Drenkard, 2010).

The organization being studied had around 551 registered nurses (RNs), out of which 481 were RNs working in inpatient settings, and 70 were RNs working in ambulatory care. The study used non-random sampling methods (convenience sampling), however, measures were taken to ensure a balanced representation of the categories in the population studied. The sample size of this study was determined using a sample size calculator. Based on the confidence level of 95 percent, a margin error of 5 percent, and a population size of 551 calculated sample size of this study were 233.

The eligible respondents in this study consist of all levels of registered nurses (RNs), cardiac catheterization laboratory nurse technicians (CLNTs) who provided direct and non-direct patient care and had at least three months of experience. The study excluded nurse aids and operating department technicians as these positions do not involve direct patient care. New RNs who work less than three months as they are still in the process of acclimatizing to the new working environment, learning the routines, and being supervised to ensure that they were adequately trained and equipped to provide quality care to patients.

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2.1. Data Collection

The survey included a consent form on the first page of both the online and physical forms, requesting the nurses' consent to participate in the study. The selection between physical form or an online form is based on the respondent's preference. Data collection commenced after obtaining IRB approval from the Research Department of the organization. The approval number was 1684 on October 2nd, 2023. The university that allows conducting the research also approved the grant on October 19th, 2023.

This study was conducted from October 23rd to November 6th, 2023. A total of 320 questionnaires have been distributed and out of this a total of 312 responses were received. Of those responses, 27.5 percent (86 responses) were collected through Google forms, while the remaining 72.4 percent (226 responses) were collected through paper forms. However, 12 responses were excluded from final analysis due to missing value. Thus, the total number of respondents that been used in the final analysis was 300.

2.2. Instrument

In the data collection process, a validated questionnaire was used to assess nurses' readiness towards EBP implementation in their practice. The questionnaire consists of 15 items, adopted with permission from the Nursing EBP Survey of 2019, Crawford et al. (2020) can be divided into three parts. The first part focuses on demographic information and EBP practice. The second part contains a Likert scale question that assess the nurse's knowledge and readiness towards EBP implementation. The last part is a list of barriers and facilitating factors towards EBP implementation.

2.3. Data Analysis

The data analysis starts by calculating the descriptive statistics such as frequencies and percentage for the demographic data such as job position, years of working experience and academic qualification. The readiness for EBP comprised of three dimensions, and measured using a 5-points Likert scale, were summarized using mean score and standard deviation. One-way analysis of variance (ANOVA) and Eta Squared have been used, respectively, to test the differences between groups and to measure the effect sizes of the individual demographic characteristics on readiness for EBP. Meanwhile, simple and multiple regression models were employed to examine the effect of knowledge on EBP, facilitating factors, and barrier factors on nurses' readiness to implement EBP. Multiple regression analysis has also been used to test the moderating effects of barriers and facilitating factors in influencing the relationship between knowledge and the readiness to implement EBP among nurses, by adding the interaction variable into the regression. For this, the interaction variable was generated by multiplying the facilitating factors and knowledge variables (Interaction variable 1), and the barriers and knowledge variables (Interaction variable 2). For each interaction variable, the estimation was carried out individually. IBM SPSS version 29 software was used in analyzing the data.

4. Results

4.1. Respondents' Profile

Table 1 presents the summary of the demographic profiles of the respondents involved in this study. Based on their job positions in the organization, most of the respondents (93%) are Clinical Nurses. Table 1 showed a wide range of tenure lengths among the nursing staff, implying that the workforce has a diverse range of experience levels. Most nurses (23%) have worked in the organization for 1 to 5 years, followed by 33%who reported having worked for 6 to 10 years and 21% have been employed for 11 to 20 years. This diversity allows for an examination of how experience may affect the readiness to implement EBP. With respect to education levels, 89% of the respondents held a bachelor's degree, 7% had a diploma, while 12 respondents or 4% held a master's degree.

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Table 1.
Demographics profile of the respondents (N = 300).

	n	%
Job positions		
Clinical nurses	279	92.9
Nurse executives	10	3.30
Nurse leaders	11	3.70
Years of experience		
< 1 year	51	17
1 - 5 years	68	22.70
6 - 10 years	98	32.70
11 - 20 years	62	20.70
> 20 years	21	7
Level of education		
Diploma	21	7
Bachelor	267	89
Masters	12	4

4.2. EBP Readiness and Knowledge Towards EBP

In this study, EBP readiness and knowledge on the EBP were measured using 5 points Likert scale, while nominal scale Yes (1) or No (0) was used to measure the 12 items of facilitator 3factors and 17 items of barrier factors. The summary of the descriptive statistics for EDP readiness and knowledge are presented in Table 2, which highlights the three dimensions of readiness towards EBP; data collection, the mean score 2.94 (SD = 0.77); access to evidence, the mean score 2.95 (SD = 0.70); and implementation, the mean score 3.17 (SD = 0.67). The scores obtained on these dimensions suggest that healthcare organizations need to improve their data collection processes and invest in technology and infrastructure to ensure staff are trained in accessing and appraising evidence. Table 2 also describes two dimensions related to knowledge towards EBP, which are practice climate with the mean score of 3.33 (SD = 0.61) and evidence appraisal, the mean score 2.87 (SD = 0.64). The descriptive statistics suggest that nurses in the organization studied have a moderate level of knowledge on EBP.

Table 2.
Descriptive statistics of the main constructs.

Construct/Main variable	Dimension (Subscales)	No of items	Mean score
Readiness to implement EBP	Data collection	3	2.94 (SD 0.77)
	Access to evidence	2	2.95 (SD 0.70)
	Implementation	2	3.17 (SD 0.67)
Knowledge towards EBP	Practice climate.	5	3.33 (SD 0.61)
	Evidence appraisal	3	2.87 (SD 0.64)

Note: SD: Standard deviation.

4.3. Facilitating Factors of EBP

Figure 2 presents the facilitating factors that could enhance the implementation of EBP in the organization studied. The survey showed that the most selected facilitating factor was EBP training (72%), followed by support from the work environment and nurse leaders (63%), EBP activities, and organizational support (60%). Employing nurses with research skills and involving them in research, workplace satisfaction, and the organizational culture of EBP were also identified as essential factors. Overall, creating a positive work environment that values EBP can help to improve readiness and promote its successful implementation.

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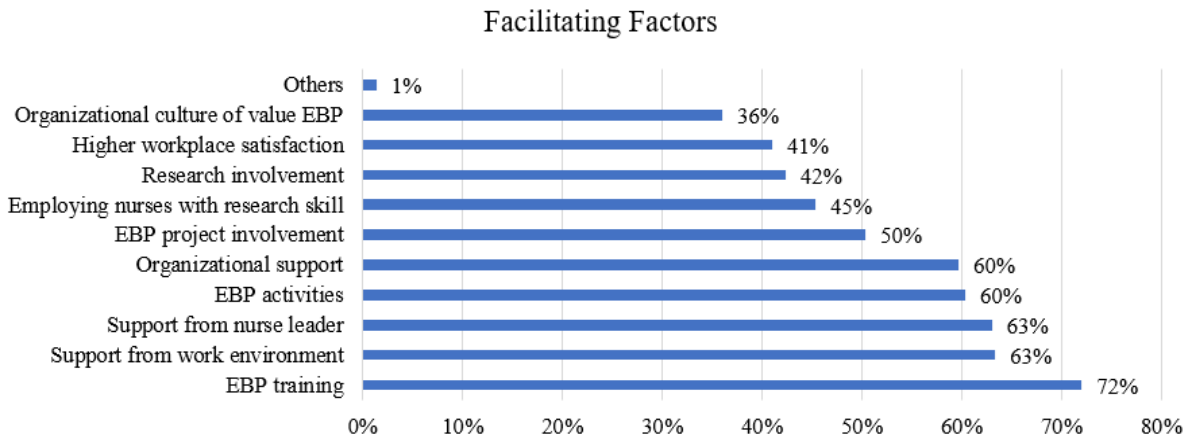

Figure 2.
Facilitating factors.

4.4. Barriers in Implementing EBP

Figure 3 summarizes the major barriers to EBP implementation in healthcare settings. The results showed that staff shortage (64%), insufficient time (63%), and lack of expert support (50%) are the most significant challenges. Other barriers include workflow interruptions (50%), inability to implement research findings (47%), lack of education (45%), lack of resources (43%), lack of organizational support (39%), lack of teamwork (34%), and lack of authority to change practice (29%). Addressing these barriers could provide the necessary support and resources for effective EBP implementation in the organization.

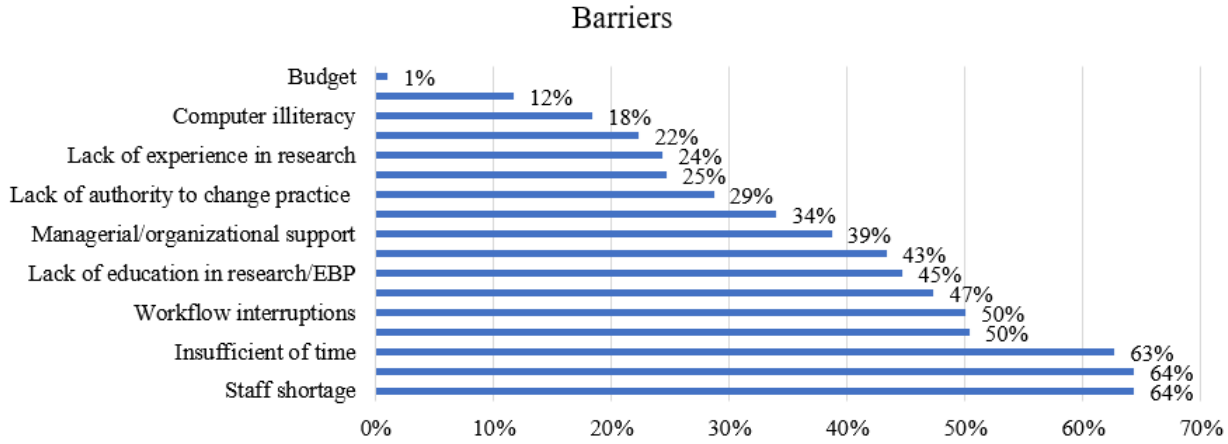

Figure 3.
Perceived barriers in implementing the EBP.

4.5. Demographic Characteristics and the Readiness Towards EBP

The inferential analysis starts by examining the relationship between the demographic factors and the readiness to implement EBP among nurses in the organization studied. This study found that there is no significant difference in the level of readiness to practice EBP among different job positions in the organization. As illustrated in Table 3, this study found the effect size of job positions on EBP readiness is not strong enough and not significant (effect size (η^2) 0.047, p-value 0.231). This study also found there is no significant difference in the level of readiness to practice EBP among employees with different years of working experience in the organization. The effect size of 0.21 indicates a moderate influence of years of working experience on EBP readiness but is also not significant at 5% levels (effect size (η^2) 0.021, p-value 0.177). In contrast, the result showed there is a significant difference in the

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readiness to practice EBP among nurses with different education qualifications. The p-value is less than 0.05, which suggests that the level of qualification has a significant effect size on the readiness of EBP in an organization.

Table 3.
ANOVA analysis results of EBP readiness and the demographic characteristics.

Independent variable (IV)	F	Eta squared (η^2)	p-value
Job position	1.287	0.047	0.231
Years of working experience	1.588	0.021	0.177
Level of Education	4.196	0.027	0.016*

Note: *Significant at 5% levels.

4.6. Results from Regression Analysis

Simple and multiple regression analysis has been used to evaluate the readiness towards EBP, and the factors studied. In the simple regression analysis, each independent variable studied was regressed with the dependent variable, the readiness to implement EBP among nurses, individually. Meanwhile in the multiple regression analysis, the dependent variable of the study was regressed with all independent variables in one single linear equation. The independent variables are knowledge on EBP, the facilitating factors, and barrier factors. Table 4 presents the results from the regression analysis.

Table 4.
Regression results of EBP readiness and the knowledge towards EBP, facilitating factors and barriers.

Independent variable (IV)	Coefficients	t-statistics	p-value	Adjusted-R2
Simple regression model				
Knowledge towards EBP	0.575	19.984	0.001*	0.573
Facilitating factors	0.133	2.323	0.021*	0.18
Barriers	-0.041	-0.707	0.480	0.002
Multiple regression model				
Knowledge towards EBP	0.750	19.576	0.001*	0.575
Facilitating factors	-0.100	-2.225	0.027*	
Barriers	0.058	1.273	0.204	

Note: *Significant at 5% levels.

Estimation results for simple regression between EBP readiness and knowledge towards EBP, facilitating factors and the barriers. Individually, found a significant association between the nurses' level of knowledge of EBP and facilitating factors with the nurse's readiness to practice EBP. Both variables are significant at 5% levels. The results suggest that healthcare organizations should focus on addressing the knowledge levels towards EBP and facilitating factors that impact the readiness to apply EBP. This study, however, failed to find support that barriers significantly influence the readiness to apply EBP.

The results from multiple regression analysis are consistent with the results from simple regression analysis. The results from multiple regression analysis revealed that as a group, variable knowledge towards EBP, facilitating factors, and barriers significantly influence nurses' readiness to practice EBP. The adjusted R-squared value of 0.575 suggests that the model fits the data well. The adjusted R-squared value of 0.575, indicating that approximately 58% of the variance in readiness to practice EBP can be explained by the three independent variables used in the regression. Individually, only variable knowledge on EBP and facilitating factors are statistically significant at 5% levels. However, in contract with the regression result from simple regression, the parameter estimated of multiple regression model for facilitating factors is negative.

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4.7. Moderating Effects of Facilitating Factors on the Relationship Between the Level of EBP Knowledge and the Readiness to Apply EBP

Table 5 presents the results of a regression analysis to examine the moderating effect of Facilitating Factors on the relationship between knowledge on EBP and readiness to practice it. The impact was tested by adding the interaction variable 1 (Knowledge@Faciltating factors) in the multiple regression equation which also consists of Knowledge and Facilitating, as independent variables. The estimation results found that moderating effects of facilitating factors are not statistically significant. Therefore, this paper concluded that facilitating factors do not play a moderating role in influencing the relationship between knowledge of EBP and the readiness to practice EBP.

Table 5.
Regression analysis results of effect of facilitating factors on the relationship between the level of EBP Knowledge and the EBP readiness.

Independent variable (IV)	Coefficients	t-statistics	p-value	R^2
Knowledge (K)	0.784	10.004	0.001	0.573
Facilitating factors (F)	0.113	0.411	0.682	
Interaction variable 1 (K@F)	- 0.118	- 0.403	0.687	

4.8. Moderating Effects of Barriers on the Relationship Between the Level of EBP Knowledge and Nurses' Readiness to Apply EBP

Finally, a test was conducted to investigate the moderating effect of barriers on the nexus between knowledge on EBP and nurses' readiness to implement EBP. Similarly, the result (Table 6) found the moderating effect of barriers on the relationship between knowledge towards EBP and readiness for EBP is not significant. The findings suggest that nurses' readiness to implement EBP is influenced more by their knowledge of EBP than by the barriers they encounter.

Table 6.
Regression analysis results of effect of barriers on the relationship between the level of EBP Knowledge and the EBP readiness.

Independent variable (IV)	Coefficients of MV	t-statistics	p-value	R2
Knowledge (K)	0.768	11.256	0.001	0.577
Barriers (B)	- 0.027	- 0.102	0.919	
Interaction variable 2 (K@B)	- 0.044	- 0.161	0.872	

5. Discussion

This study highlights the critical role of knowledge in influencing nurses' readiness to implement evidence-based practice (EBP) in their clinical settings. The findings are consistent with previous research, such as the study by Chan et al. (2016), which identified significant challenges that healthcare organizations face in adopting EBP. Key facilitators for EBP implementation include access to evidence and effective data collection methods. However, common barriers like lack of time, insufficient knowledge and skills, and an unsupportive organizational culture were also identified.

Demographic factors such as job positions, years of experience, and educational qualifications were examined as potential predictors of EBP readiness. The study found that readiness for EBP varies based on specific job responsibilities. Nurses in leadership roles, who generally have better access to evidence-based resources and guidelines, showed higher readiness to implement EBP. In contrast, clinical providers with direct patient care responsibilities often face time constraints and limited resources, hindering their EBP activities. Interestingly, the study found that experience alone does not guarantee readiness for EBP implementation. However, higher educational levels were significantly associated with greater readiness, suggesting that advanced education helps nurses develop critical thinking and analytical skills essential for EBP.

Regression analysis revealed a significant positive relationship between nurses' knowledge of EBP and their readiness to practice it. This implies that nurses with higher knowledge about EBP are more likely to be ready to implement it. Consequently, enhancing nurses' knowledge through targeted

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ISSN: 2576-8484
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training programs and educational interventions is crucial for promoting EBP in healthcare settings. Studies by Melnyk et al. (2020) and Kyriakoulis et al. (2016) demonstrate that interventions such as web-based educational modules, mentoring, feedback, interactive workshops, online courses, and mentorship programs can significantly improve nurses' knowledge, attitudes, and implementation of EBP.

Further analysis showed that facilitating factors and barriers do not significantly moderate the relationship between nurses' knowledge of EBP and their readiness to implement it. This suggests that nurses' readiness to adopt EBP is more strongly influenced by their knowledge than by external factors. Even when nurses face barriers or lack organizational support, they can still develop the necessary readiness for EBP through education and training.

In conclusion, this study underscores the importance of enhancing nurses' knowledge of EBP to improve their readiness for its implementation. While facilitating factors and barriers are relevant, they do not significantly alter the impact of knowledge on readiness. Therefore, healthcare organizations should prioritize providing targeted educational interventions to equip nurses with the necessary knowledge and skills for effective EBP implementation.

6. Conclusion

The successful implementation of evidence-based practice (EBP) relies on more than just nurses' knowledge; it requires a supportive organizational culture and adequate resources. Nurses face challenges like limited time, staffing, and access to research evidence. Thus, a comprehensive approach addressing individual beliefs, organizational culture, leadership support, and resource accessibility is crucial. Promoting EBP among nurses is essential for delivering the highest quality patient care, making it vital to address these broader factors for successful EBP implementation.

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Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 6: 4126-4135, 2024
DOI: 10.55214/25768484.v8i6.2903