

# Factors Affecting the Application and Implementation of Evidence-based Practice in Nursing

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## ABSTRACT

**Background:** Even though Evidence-Based Practice is a complex process, it's application has been recognized worldwide as a lever of improvement of the provided health services. **Objective:** This study investigates the factors which influence the implementation of Evidence-Based Practice and their correlation with nurses' socio-demographic characteristics. **Methods:** This is a cross-sectional study for which data were collected through an anonymous questionnaire. The study sample included 302 nurses from six public hospitals in Cyprus. Data collection was conducted from April 2018 to July 2018. **Results:** According to the nurses, the biggest obstacle for the application of Evidence-Based Practice is the lack of authority/power to change care procedures (83.8%), followed by the view that the results were not applicable in the nurses' environment (81.5%). **Conclusion:** The identification of factors affecting the implementation of Evidence-Based Practice can serve as a basis for improving the quality of healthcare, as well as for developing strategies for resolving existing problems. This study showed that there is a need to create opportunities for the use of Evidence-Based Practice by nurses. **Keywords:** Barriers, Factors, Evidence-Based Practice, Nursing.

## 1. BACKGROUND

The adoption of Evidence-Based Practice (EBP) is a complex process that entails behavioural change by healthcare professionals as well as changes in the entire healthcare system (1). However, its application has been recognised worldwide that it improves the health services, as it increases the quality of care and reduces hospital costs (2). Quality of nursing care is a primary obligation of nurses, the right of patients, and a factor in accelerating scientific and clinical progress in nursing work (3). Despite calls for increased quality of nursing care and reduced costs, EBP has not been studied if it integrating into the daily practice of Cypriot nurses. Cyprus, although a university-level country in the field of nursing that has been focusing on research in recent years, there is no evidence in the literature that attempts to apply EBP to Cypriot hospitals.

Although many studies suggest that nurses have a positive attitude

towards EBP, and recognize its usefulness (4, 5), its application in practice is limited (5, 6). A recent survey showed that 72.1% of nurses had not previously tried to apply the EBP (6).

The application phase is considered a complex and slow process that is influenced by various factors at multiple levels (7). Many researchers have identified several barriers to the implementation of research findings in practice (7-9). Contrary to expectations, research continues to identify inconsistencies in its adoption and application in the clinical work environment (10).

Factors that prevent the implementation of EBP may relate to either the nurses' or the organisation's readiness for implementing it, and include awareness regarding the need for information, actual knowledge based on documented knowledge, access to resources, and an organisational culture that supports EBP as well as the time period required for its implementation (11).

More specifically, research has shown that factors limiting the extent of EBP include lack of knowledge and skills, insufficient time to find research reports, difficulty in understanding research reports, lack of resources, limited support, lack of financial, material and human resources and inadequate training in research methods (6, 12-14).

Moreover, some studies showed that the characteristics of nurses appear to have in some cases influenced the way they perceive the factors that affect the implementation of EBP (4, 15-17). However, the number of studies conducted is insufficient and there is insufficient information on this correlation. Some research has indicated that barriers to the implementation of EBP are associated with nurses' education and work experience (15, 18). According to research results, senior nurses, who were in senior positions and had a degree or had previously received training in EBP, had a greater intention to apply EBP (15, 18).

The Cyprus had an outdated health system, which was a remnant of British colonialism, with the Ministry of Health been the main body of its operation. Until 2019 Cyprus healthcare consisted of two fragmented health sectors which operated in a parallel and uncoordinated way, the private sector, and the public one. Free access to the public sector system was granted to persons who satisfied one of several socioeconomic or employment status criteria. Those who did not have a good financial situation their choice was the public hospital, where the waiting lists were very long and the quality of care was poor. Also, the lack of coordination across the two sectors, led to highly inefficient capacity planning both in terms of human resources as well as infrastructure, in both ends of the spectrum. The situation further deteriorated after the 2013 financial crisis and then Cyprus entered into a memorandum, which forced the transition to a new, modern and improved health system (19).

The General Healthcare System (GHS) was implemented in June 2020. Cyprus is currently undergoing major transformation in establishing the new universal coverage General Healthcare System (GHS) (20). The economic system underwent systemic changes and fluctuations and there is still work in progress towards a transformative Cypriot GHS that will provide universal coverage to the Cypriot population through the merging of public and private health resources. This universal health insurance scheme aims to provide affordable and effective medical care to Cyprus residents. Also allows patients to choose healthcare providers from both the public and private sector (20). The general health system was not implemented at the time of this study.

## 2. OBJECTIVE

The purpose of this study was to explore factors that influence the implementation of evidence-based practice in nursing and their correlation with nurses' socio-demographic characteristics.

### Research questions

a) What are the main perceived factors on nurses perspective that influence the application of EBP in clinical

practice?

b) Is there a relationship between occupational, demographic and educational characteristics with the individual readiness of nurses for the implementation of EBP and the factors that affect the implementation?

## 3. METHODS

### Study Design

A descriptive correlational study (following STROBE check list) investigated the factors influencing nurses' EBP, as well as the demographic and occupational characteristics related to perceptions of barriers.

### Sample

The study population consisted of all registered nurses (technological and university education and/or postgraduate degree holders) from all age groups and of any positional post, working in all public hospitals of Cyprus in secondary and tertiary care units ( $N=1613$ ).

Before the start of the study, the final sample was calculated following a power analysis with the statistical package G power v.3.1.9.2 (21) for the effect size of a multiple linear regression model, with a dependent variable barrier level (barriers) and demographic and job characteristics as independent variables (predictor variables). The literature review showed small to moderate effect sizes ( $f^2 = 0.05$ ), with a total of five to eight predictor variables (15, 16, 22). Power analysis with an effect size  $f^2 = 0.05$ , significance level  $p = 0.05$ , and 80% power showed a required sample size of 302 individuals.

The following characteristics were required for nurses to participate in the study:

- Desire to participate in the research,
- A graduate with a technological or university education and postgraduate degree holder,
- Employed in secondary and tertiary care departments in any of the six public hospitals in Cyprus.

### Data collection

The present study was carried out in all public hospitals of Cyprus, which are six in total, from all secondary and tertiary care departments. For the purpose of the study, the Barriers Scale tool (23) was used. The Barriers Scale tool, a self-reporting questionnaire, was translated into Greek and weighted for the purpose of the study. The survey was retested for internal consistency after translation to Greek. The Greek version scale of the barriers yielded an internal consistency index of Cronbach's alpha = 0.90.

The questionnaire was accompanied by an additional study on the sociodemographic characteristics of the participants. It consisted of seven questions about age, gender, academic qualifications, years of experience, office, workplace, and education.

Data were collected from April 2018 to July 2018 using randomised stratified sampling. Nurses were selected proportionally to the population of staff in each hospital and in each department involved in the study. Employee names were selected from the employee catalogue of each department. A random selection was completed via the use of random numbers generated by Excel 2016 which was dependent on the number of samples the researcher

requested. A total of 400 questionnaires were distributed until the desired number of 302 questionnaires were received.

Along with the questionnaire, a written informed consent form was also provided, which stated the researcher's information, the purpose of the research, the preservation of anonymity and confidentiality, and the voluntary participation of the individuals. Signing the consent form indicated the person's consent to participate in the study. The questionnaire was distributed and collected by sharing anonymous envelopes that included the survey. Prior to distribution, a verbal agreement with the department manager was in place, explaining that the survey would not take more than 15 minutes to complete.

Once the survey was answered, it was placed in a white blank envelope to eliminate any connection with the participants' names. The researcher provided the respondents with the required time to answer the survey, taking into consideration that this activity would not take time away from the respondent's break time, or affect any of their hospital duties.

#### **Instrument**

**Barriers to the Research Utilisation Scale:** The scale included 35 questions. The first section comprised 29 questions rated on a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = no opinion) (23). The Barriers Scale scores can therefore range from 29 to 116. Factor analysis was performed independently in two subgroups and throughout the sample (1989 nurses, 40% response rate) to examine the validity of the structure, resulting in four factors (four subscales): characteristics of the potential adopter, characteristics of the organisation in which the research will be used, characteristics of the innovation or research, and characteristics of the communication of the research (24).

Funk et al. (1991) used factor analytic procedures to determine instrument reliability. Cronbach's alpha coefficient for the four factors of the instrument was found to be 0.65–0.80, with a total correlation of 0.30–0.53. Cronbach's alpha for communication characteristic was 0.65 while for innovation features, it was 0.72. However, the other two factors presented strong reliability, with the Cronbach's alpha coefficient reaching 0.80. Test-retest reliability was found to be 0.68–0.83 (23).

#### **Ethical consideration**

This study was approved by the National Committee of Bioethics.

#### **Data analysis**

Descriptive statistics were used to analyse the demographic characteristics of the participants. The overall results of the tool are presented along with its subscales. The data are presented as a percentage frequency distribution for demographic characteristics (*N*). Continuous variables, for example, scales and subscales, were presented as mean  $\pm$  standard deviation. Linear correlations between variables were examined with Pearson's coefficient, since the distribution of factors did not deviate from the normal distribution. Data were analysed using SPSS version 23. Data were coded and entered into an SPSS file. The statistical significance for all the above

tests was set at 0.05.

The correlation of demographic characteristics with barriers was conducted using multivariate analysis of variance (MANOVA). MANOVA is used when there are many independent variables and multiple dependent variables. The dependent variables were correlated with each other. In this study, the independent variables included demographic characteristics, while tool factors were considered as dependent variables. In the case of a statistically significant correlation of demographics with the set of factors, further analysis was performed (follow-up) to investigate the specific factors associated with demographic characteristics.

## **4. RESULTS**

Table 1 presents the demographic and occupational characteristics of the participants. The survey included 302 nurses, of which 218 (72.2%) were women and 84 (27.8%) were men. Furthermore, 21.5% of the respondents were in the age group of 20–29 years, 28.5% were in the age group of 30–39 years, 36.4% were in the age group of 40–49 years, and 13.6% were 50 years old or above. With regard to education level, 115 participants (38.1%) held a master's degree, and three participants (1%) had a doctorate. Additionally, 26 participants (8.6%) held the position of a head nursing officer.

	N	%
<b>Sex</b>		
Female	218	72,2
Male	84	27,8
<b>Age</b>		
20-29	65	21,5
30-39	86	28,5
40-49	110	36,4
50-59	38	12,6
60-69	3	1,0
<b>Education Level</b>		
Diploma/Degree	184	60,9
Masters Degree	115	38,1
Ph.D	3	1,0
<b>Years of Service</b>		
<=5	29	9,6
6-10	79	26,2
10-14	71	23,5
15-19	63	20,9
=>20	60	19,9
<b>Position/Office</b>		
Nursing Officer	276	91,4
Head Nursing Officer	26	8,6

**Table 1. Socio-demographic characteristics of the participants (N=302)**

Table 2 presents the responses in percentage to the statements on barriers to EBP. Item number 13 ("The nurse does not feel that he has enough power to change patient care procedures") was considered as the highest barrier (moderate or even high barrier) by 83.3% participants. This was followed by number 14 ("The nurse feels the results do not apply to their own environment"), which was stated as a barrier by 81.5% participants. The third greatest barrier/obstacle was number 6 ("Facilities

Barriers	To no extent	To a little extent	To a moderate extent	To a great extent	No opinion
1. Research reports/articles are not readily available	5,6%	24,2%	49,7%	19,5%	1,0%
2. Implications for practice are not made clear	4,6%	25,5%	53,0%	14,9%	2,0%
3. Statistical analyses are not understandable	5,3%	23,5%	45,7%	23,5%	2,0%
4. The research is not relevant to the nurse's practice	20,2%	23,2%	42,4%	9,9%	4,3%
5. The nurse is unaware of the research	22,5%	25,8%	31,5%	17,5%	2,6%
6. The facilities are inadequate for implementation	2,3%	16,6%	29,8%	46,4%	5,0%
7. The nurse does not have time to read research	6,6%	14,6%	39,4%	36,4%	3,0%
8. The research has not been replicated	6,3%	24,5%	42,4%	15,2%	11,6%
9. The nurse feels the benefits of changing practice will be minimal	10,6%	22,5%	41,1%	21,9%	4,0%
10. The nurse is uncertain whether to believe the results of the research	6,0%	26,2%	48,3%	16,2%	3,3%
11. The research has methodological inadequacies	3,0%	26,8%	45,0%	17,2%	7,9%
12. The relevant literature is not compiled in one place	6,6%	15,6%	40,4%	30,1%	7,3%
13. The nurse does not feel she/he has enough authority to change patient care procedures	4,6%	8,9%	30,8%	53,0%	2,6%
14. The nurse feels results are not generalizable to own setting	3,6%	13,6%	44,4%	37,1%	1,3%
15. The nurse is isolated from knowledgeable colleagues with whom to discuss the research	11,3%	19,5%	38,7%	26,8%	3,6%
16. The nurse sees little benefit for self	13,2%	22,2%	42,7%	18,2%	3,6%
17. Research reports/articles are not published fast enough	3,3%	23,5%	44,7%	21,2%	7,3%
18. Physicians will not cooperate with implementation	4,3%	14,2%	32,8%	46,0%	2,6%
19. Administration will not allow implementation	6,6%	16,9%	37,7%	34,4%	4,3%
20. The nurse does not see the value of research for practice	9,9%	28,1%	41,7%	16,2%	4,0%
21. There is not a documented need to change practice	14,9%	25,5%	37,4%	16,9%	5,3%
22. The conclusions drawn from the research are not justified	8,3%	30,1%	44,0%	10,3%	7,3%
23. The literature reports conflicting results	4,0%	23,5%	49,0%	18,2%	5,3%
24. The research is not reported clearly and readably	4,6%	31,1%	39,7%	18,2%	6,3%
25. Other staff are not supportive of implementation	4,6%	17,2%	44,7%	29,8%	3,6%
26. The nurse is unwilling to change/try new ideas	10,3%	20,9%	37,7%	28,5%	2,6%
27. The amount of research information is overwhelming	3,6%	14,2%	47,0%	31,1%	4,0%
28. The nurse does not feel capable of evaluating the quality of the research	12,9%	18,5%	46,4%	18,9%	3,3%
29. There is insufficient time on the job to implement new ideas	4,6%	16,2%	39,1%	36,4%	3,6%

Table 2. Distribution of responses across barriers (N = 302)

are inadequate for implementation”). Interestingly, the highest percentage of the “no opinion” option (11.6%) was selected for item number 8 (“Research was not repeated”).

The MANOVA analysis (Table 3) showed that there is a correlation between gender and the level of barriers perceived by nurses (*Wilks' lambda* = 0.957, *p* = 0.014), as well as between nurses' education level and their perception of barriers (*Wilks' lambda* = 0.936, *p* = 0.001).

The follow-up analysis (Table 4) showed that of the four barriers, gender appeared to be associated only with the “adoption” factor, where women (2.65 ± 0.6) reported lower levels of obstacles to the “adoption” factor than men (2.84 ± 0.6) (*F* (1,290) = 5.74, *p* = 0.017). Additionally, the follow-up analysis (Table 4) also indicated that the education level is specifically related to the “agency / organization” factor, where nurses with a diploma or degree (2.87 ± 0.5) reported higher levels of barriers than nurses with a master's degree or Ph.D. (2.68 ± 0.5) (*F* (1,290) = 1.97, *p* = 0.005).

### 5. DISCUSSION

The purpose of this study was to identify the factors that influence the implementation of EBP and to investigate whether and how these factors cor-

Effect	Wilks' Lambda	F	Hypothesis df	Error df	p-value
Intercept	0,085	776,527	4	287	<0,001
Gender	0,957	3,189	4	287	0,014
Age	0,957	1,058	12	759,622	0,393
Educational Level	0,936	4,934	4	287	0,001
Years of Service	0,941	1,106	16	877,437	0,344
Position/Office	0,993	0,472	4	287	0,756

Table 3. Multivariate analysis of variance (MANOVA) in barrier factors and mean level of barriers per gender and educational level [\* statistically significant difference at α = 0,05]

	Gender			
	Women		Men	
	Mean	S.D	Mean	S.D
Adoption	2,65	0,6	2,84	0,6
Agency/Organization	2,77	0,5	2,87	0,5
Innovation	2,80	0,6	2,81	0,5
Communication	3,16	0,5	3,19	0,5
Educational Level	Diploma/ Bachelor degree		Master degree/ Doctorate	
	Mean	S.D	Mean	S.D
Adoption	2,73	0,6	2,68	0,6
Agency/Organization	2,87	0,5	2,68	0,5
Innovation	2,85	0,5	2,74	0,6
Communication	3,13	0,5	3,23	0,5

Table 4. Mean level of barriers per gender and educational level [\* statistically significant difference at α = 0,05]

relate with nurses' socio-demographic characteristics. The study sample included 302 registered nurses from all provinces of the non-occupied part of Cyprus. Analogue-stratified sampling was used for recruitment. Stratification was performed in terms of the hospital and department/ward. Barriers to the research utilisation scale were used for data collection.

### **Barriers to implementation of Evidence-based Practice in nursing**

Almost all current investigations present similar findings regarding barriers, with a difference in the severity of each factor. The findings showed that the biggest barrier/obstacle to using research in practice is the lack of power to change care procedures (83.8%), followed by the view that the results are not applicable to the nurses' environment (81.5%) and that there are insufficient implementation facilities (78.8%).

The lack of power to change procedures appeared to be the major obstacle according to the present study findings, which has been confirmed by other studies (24, 25). This may be due to the hierarchical structure of modern hospitals in some countries, as physicians/doctors are in a higher hierarchy and have higher authority roles (26), which results in very low levels of autonomy and authority for nurses and their opinions on patient care not being valued by the physicians (27). The medical profession is dominated by high social status and the prerogative of knowledge held by doctors and physicians (28). Foucault's theory of power explains the link between knowledge and power, which states that the success of any knowledge network is understood through its connection with power relations, which are always functionally tied to human interests and strategies. In other words, power and knowledge presuppose each other (29).

According to nurses, the second barrier is that the results are not applicable to their own environment. This seems to be linked to other factors that make implementation difficult. When nurses are not aware of the stages of the procedure or even their existence, it is expected that the results will be considered inappropriate on their part (25, 30).

Omer, (2012), study results conducted in three (3) regions of Saudi Arabia on four hundred and thirteen (413) nurses, along with the results of Buhaid, Lau, & O'Connor, (2014) study having a sample of two hundred and nineteen (219) nurses in Bahrain, showed that for many nurses research results are not applicable in their clinical environment.

Likewise, according to this as well as many other studies, the barrier of insufficient facilities was found to be one of the main factors that make it difficult for nurses to apply research findings (31, 32, 33).

Inadequate facilities for the application of EBP have also been cited as obstacles not only by nurses but also by other health professionals in studies (25, 34). The financial situation of a country also plays a key role, as it has been observed that nurses from more developed countries such as Norway and the USA did not share the same view regarding the facilities and equipment (22, 27). In the case of Cyprus, where the financial resources avail-

able in the health sector are scarce, the inadequacy of hospital facilities and equipment is justified.

The above findings support the view that the factors that impede the implementation of EBP are organisational factors. This conclusion is consistent with the findings of previous studies, which have indicated that organisational factors are crucial for EBP implementation (6, 24).

In summary, the barriers discussed in this study were not significantly different from those discussed in the majority of studies conducted in countries such as Turkey (26, 34), Bahrain (25), China (35), the USA (22), and Spain (36). A common difference was in the weight of each factor. It can therefore be said that barriers identified by professional nurses are the result of differences between the environmental conditions of each organisation and the strategies used to provide hospital care to patients. The Ottawa model of research use is a key element that may encourage or discourage research utilisation in a practice environment (37).

### **Correlation between Socio-demographic factors and Evidence Based Practice application obstacles**

#### **Sex**

It was shown that women seemed to perceive fewer barriers in adopting the Documented Practice. However, this correlation has not been presented in any other recent research and no direct comparisons can be made.

#### **Education**

There was a positive correlation between the variables of barriers and education. Specifically, nurses holding a Diploma or Degree stated more obstacles (concerning the factor organization) than nurses who hold a Master's or Doctoral degree. Typically, postgraduate courses include more specialized courses on nursing research methodology (15). According to the results of previous research (4, 16), more qualified nurses or nurses who have attended a training program related to EBP tend to perceive fewer barriers to its application than those with a Diploma or Degree. The increased research training received by Postgraduate students in comparison to undergraduates or Diploma holders (17) is probably the reason why nurses with more research experience perceived fewer barriers to the use of research (24).

#### **Work experience**

It has been found that clinical experience is a factor associated with barrier perceptions. Nurses with less experience (fewer years of service) perceive more barriers to the application of EBP than nurses with more experience. Similar results were shown by other studies (16, 35, 38). In a descriptive correlation study in Oman by Ammouri, et al., (2014), with a sample of four hundred nineteen (41) nurses from four (4) public hospitals in the country, it was found that nurses with more years of experience reported a more frequent use of EBP. and perceived fewer barriers in finding and examining research. Similarly, in a secondary study, the study of Oh, (2008), showed that nurses with less than 10 years of clinical experience perceived the biggest obstacles and vice versa. Probably, clinical experience helps nurses to identify with greater ease the needs for improvement or to better evaluate the applica-

tion of new research data.

### Limitations of the study

The sample for this study included nurses from the public health sector, depriving them of the opportunity to compare with the private sector, where the environment and working conditions are different. A comparison of public and private hospitals could reveal the extent and manner in which environmental factors influence the implementation of EBP. Another limitation is that only clinical nurses working in secondary and tertiary health care departments were included, thus limiting the opportunity to compare with nurses whose nature of work differs. In addition, a self-report questionnaire was used to collect data, which may limit the accuracy of the answers. If the nurses had a vague picture of EBP, it may have influenced their responses, raising questions about their credibility.

## 6. CONCLUSION

This study identified several factors that influence the application of EBP in the nursing environment of Cyprus. The findings indicate that nurses' lack of authority is the most important factor in their inability to use the results of research in practice and, consequently, in adopting EBP. The reason nurses lack autonomy is unclear and requires further investigation. Identifying the factors that affect the implementation of EBP can become a stepping stone for the commencement of discussions concerning the elimination of these barriers from the healthcare sector and finding ways to resolve existing problems.

Additional studies need to be conducted on this subject throughout Cyprus, both in the public and private sectors, to provide a clearer picture of the application of EBP and the impact of environmental conditions on its implementation. As this is the first research to be conducted on this subject, it is likely to form the basis for further investigation.

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