

SPECIAL PAPER

**Nurses' Research Behavior and Barriers to Research Utilization
Into Clinical Nursing Practice: a Closer Look**

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Abstract

Background: It is widely accepted that utilization of the best-known research evidence in nursing practice entails improvement of nursing care received by patients and strengthening of nursing profession.

Aim: The aim of this paper was the review of nurses' research behavior and the barriers that nurses meet in order to utilize research evidence into clinical nursing practice.

Methodology: There has been conducted a literature search in Pubmed and Science Direct libraries, using specific search terms. An important inclusion criterion for the studies was the use of barriers to research utilization scale (BRUS), along or combined with another instrument.

Results: A total of 37 original papers included in the present article. A table of the top five barriers to research utilization scale has been conducted. Data from the table indicate that the existence of barriers to incorporation of evidence into practice comes mainly from clinical settings characteristics. In addition, issues about nursing education, nurses' research and reading habits, facilitators of research utilization and their relevance for nursing staff and clinical practice are also discussed.

Conclusions: Since the barriers to research utilization are well identified in the nursing literature and there is a wealth of information on this subject, the next step is to find ways to overcome them and value the impact of the relevant interventions towards research utilization behavior.

Keywords: barriers to research utilization, facilitators, clinical research, nurses, nursing, attitudes.

Introduction

Observation consist a useful tool that it is necessary for the development of research. Like the science of medicine and nursing science so, research is valuable for its progression (Moreno-Casbas et al, 2011). Research is a field that always new information is arising. Up to now, nurse researchers have done remarkable advances at subjects relevant with the nursing science. But what we mean with the term nursing research? Nursing research is a "scientific process that validates and refines existing knowledge and generates new knowledge that directly and indirectly influences nursing practice" (Burns & Grove, 2001, p. 4). One would say that nursing research moves into two directions. The first one, have to do with multiple benefits towards the nursing as

science (enlargement of the basic nursing knowledge, strengthening of the nursing profession, effective evaluation of nursing care, solving clinical nursing problems, positive changes in clinical practice, articulation of the nursing role in a multidisciplinary team). The second direction concerns the provision of an evidence-based patient nursing care and also an advanced patient care-nursing quality.

Although the research evolution in the nursing field, the efforts that aim at the bridging of the gap between theory and everyday clinical practice still remains a challenge for the nursing world. The translation of nursing knowledge into practice is called research utilization or research-based practice. Despite the emphasis given at the research utilization, evidence so far shows

that the gap between theory and practice cannot be fulfilled because of the occurrence of barriers. Familiar with research-based practice, is the evidence-based practice, which also has been discussed lately a lot. Evidence-based practice is a broader term that refers not only to research utilization, but encompassing a variety of factors (Yava et al, 2009, Strickland & O'Leary-Kelley, 2009).

The aims of this paper were the exploration of: (1) the characteristics of research behavior in nursing practice; (2) nurses' perceptions of barriers to research utilization into practice; and (3) the facilitators of nursing research utilization in practice.

Analysis of the barriers scale

The number of instruments that measure nurses attitudes towards research utilization as it is proven by bibliography is fourteen (Frasure, 2008). Until now, the use of the questionnaire of barriers to research utilization scale created by Funk et al. (1991), is well documented in the literature. Since then, this questionnaire is the most frequent use tool to estimate what nurses perceive as barriers to utilize the research evidence into practice. The reliability and the validity of this instrument have been recognized. The barriers scale is divided into four subscales: characteristics of the adopter (nurses' values, skills and awareness), characteristics of organization (setting, barriers and limitations), characteristics of the innovation (qualities of the research) and characteristics of the communication (presentation and accessibility of research). Each subscale contains items (in total 28). The subscales Cronbach's alpha values were 0.80, 0.80, 0.72 and 0.65 respectively. Nurses that participated in studies using this instrument, have to rate the extent to which they perceive each item as a barrier to research utilization, based on a four-point scale (1=to no extent, 2=to a little extent, 3=to a moderate extent, 4=to a great extent). Alternatively, nurses can select no opinion choice. At the end of the questionnaire, nurses rate the top 3 of the 28 items barriers scale and also can add moreover barriers. Additional items were completed to the questionnaire from

researchers in different countries. Kajermo et al. (1998) added the item "research reports/articles are written in a foreign language", Chau et al. (2008) added the item "research reports/articles are published in English and are difficult to understand" and Retsas (2000) added the item "the amount of research is overwhelming" (Kajermo et al, 2010,

<http://www.unc.edu/depts/rsc/funk/barriers.html>, accessed 2012). Using the barriers to utilization scale it is necessary the simultaneous measurement of nurses' research habits, whereas this tool does not record research habits; only barriers (Andersson et al, 2007).

Nursing education

Across the countries, nursing education poses a determinant predictor to the starting point and mostly to the nurses' contribution to the nursing research. As the higher the education level that nurse received, the more willing are nurses to do research. In Turkey, the majority of nurses holds a diploma in nursing and received technically oriented education (Uysal et al, 2010). Similar is the situation in Greece (Patiraki et al, 2004).

Characteristics examples are the Nursing Research Association of Turkey at 1996 (Yava et al, 2009) and the establishment of a chair of clinical nursing with a leading university department of nursing in Melbourne at 1998 (Retsas 2000).

Other crucial aspect of education and research is that nurses need training on research methods and the interpretation of research evidence impact to practice (Yava et al, 2009, Uysal et al, 2010).

Nurses should be educated to another challenge they meet as researchers: the difficulty to understand statistical analysis. This can be addressed at the graduate or at master and doctorate education level. However, in many cases nurses would need further training at the statistics principles (Bryar et al, 2003).

In the context of continuing nursing education the attendance of journal clubs per month seemed beneficial, culturing nurses' positive attitude toward research. Journal

clubs should take place individually at each unit and participate usually nurses without any previous research experience. On the other hand journal clubs may be a cost-effective intervention (O’Nan, 2011).

Clinical setting characteristics

A research supportive organization and a nurse-friendly research environment where nurses working at, is a plus for nursing staff to get involved with research’s philosophy, activities and techniques (Fink et al, 2005, Kocaman et al, 2010). Research environment contains the development of policies such as guidelines, clinical pathways, care protocols, procedure manuals and algorithms based on the best available nursing information (Oh, 2008).

Besides, there is a lack of incentives provision from organizations to nurses that influence their research participation (O’Nan, 2011). Promotion of nursing research, encourage of decision-making and critically thinking are highly recognized by nurses within Magnet hospitals.

However, the existence of barriers to research utilization makes nursing research difficult. As authors mentioned, barriers should be firstly identified and then overcome (Karkos & Peters, 2006, Mehrdad et al, 2008).

Research: A guide for nurses

It is widely proven that a body of updated knowledge that consists of theory and clinical practice synthesizes what we called nursing science. It is notable the speed of steps made in nursing research over the last decade. Nurses should leave the old traditional methods and replace them with new scientific data.

The translation and application of latest evidence into clinical nursing practice fostering the professional skills of nurses’ and offers the best in patient nursing care. Particularly, owing to specificity of setting, critical care nurses should have advanced skills to deal with decision-making and solve complex problems at their critical care practice (Oh, 2008).

Overall, research findings can be used as a guide for nurses. Nurses can make their practice easier and effective, but this presupposes the right application of research by nurse researchers and organizations suitable for the support of the corporation of research into practice (Uysal et al, 2010).

Nurses’ research and reading habits

Measuring nurses’ reading habits (frequency of reading journals, last time read a nursing journal, the name of the journal) as a factor of research habits had been studied in several articles. It seems that nurses care about activities that upgrade both science and practice; nevertheless it seems that they have insufficient knowledge and not much time to dedicate research activities (Yava et al, 2009).

Results from the study of Retsas (2000), showed that two-thirds of participants (n=260, 65%) read a journal monthly or frequently and 144 nurses (36%) had read a nursing journal last week. It is worth noting that only 4.1% (n=16) of the Australian nurses prefers to read research journals usually.

Another study mentioned that Turkish nurses attended at least one congress per year (n=29, 15.3%) and one congress per 2 or 3 years (n=53, 28.1%). Interestingly, although the 66.1% (n=417) of them reported positive attitude to participate in research, only the 14.3% (n=27) of them were actually active researchers. This may be attributed to the fact that only 1% (n=6) of the nurses receive postgraduate courses on research methodology (Yava et al, 2009).

Other Turkish surveys, revealed that 72.2% of the nurses did not read research journals (Uysal et al, 2010) and 72.9 did not participate in any scientific activity (Tan et al, 2012). Among Irish nurses (medical and surgical) 55% and 61% respectively, reported use of research sometimes (Parahoo & McCaughan, 2001) and Korean nurses reported 10% participation in conferences by presentation of a paper or publication of research article (Oh, 2008).

Conferences activities (oral and poster presentations), were also low from emergency nurses, 31.7% (n=287) and 25.1% (n=225) respectively (Chan et al, 2011). Low was the subscription to scientific journals 4.9% (n=26) from nurses and almost half of them 43.5% (n=143) had read a research article during the last six months (Kocaman et al, 2010).

Methodology

A search of the relevant literature has been conducted in Pubmed and Science Direct libraries, using the following search terms: barriers, facilitators, clinical research, research utilization, nurses, nursing and attitudes. Studies that were taken into account were having the following inclusion criteria: were reviews or original articles, published in English, between January 2000 and January 2012, with free full text and the instrument used by researchers was this of Funk et al. (1991).

The references of this paper consist mainly of research papers that used barriers to research utilization scale (n=37). Moreover references added (review papers, an internet source for the barriers to research utilization scale and a book). In order to analyze the data gathered, a list was created for the classification of the top five barriers that identified by each study researchers. Each reference corresponds to an item from the barriers to research utilization scale.

Table 1. Rank order of studies origin country

Study's origin country	N
United States of America	9
United Kingdom	6
Sweden	4
Turkey	4
Ireland	3
Australia	2
China	2
Finland	2
Canada	1
Greece	1
Iran	1
Korea	1
Spain	1
Total	37

Methodological considerations of studies

Table 1 shows the origin country of each study included in this paper. Most studies (n=9 of 37) conducted in United States of America and (n=6 of 37) in United Kingdom.

Table 2 distributes the nurses' sample in each study. A majority of studies (n=22 of 37) concluded in their sample up to 400 nurses.

Table 3 summarizes some methodological characteristics of studies. Although the low response rate of the studies sample, the number of the nurses participated in most of the studies considered to be sufficient.

Table 2. Distribution of studies sample according to the nurses' number

RN Sample	N
1. Up to 100	6
2. 101-200	5
3. 201-400	11
4. 401-600	1
5. 601-800	2
6. 801-1000	4
7. 1001-1200	1
8. 1201-1500	4
9. 1501-2000	1
10. 2001-2500	2
Total	37

RN=Registered Nurse

Analysis of the top 5 barriers using barriers to research utilization scale

The following analysis is based on evidence from table 4 and respective subjects:

Nurse Subscale: Nurses who were working at provincial hospitals in Greece, thought different from those working at a central hospital relevant with the third item of the nurse subscale (P<0.05) (Patiraki et al, 2004). Nurses unaware of research, who are isolated from nurse researchers and the adoption of a negative attitude between them, create an inappropriate climate for the development and implementation of nursing evidence (Parahoo, 2000).

Setting Subscale: As shown in table 4, the first three items "insufficient time on the job to implement new ideas"; "the nurse does not have time to read research"; "the nurse does not feel she/he has authority to change patient

care procedures” of the setting subscale, each of them was perceived as top one greater or moderate barrier from 6, 4 and 10 studies respectively. Nurses consider themselves as not proper for changes in patient care procedures. Perhaps, this attitude is due to the inadequate strengthening of nursing profession; especially among other health care professionals. Twenty-four studies ranked the third item “the nurse does not feel she/he has authority to change patient care procedures” at the top 4 of barriers to research utilization.

Twenty-three studies ranked the first item “insufficient time on the job to implement new ideas” at the top five of barriers to research utilization. Twenty-two studies ranked the second item “the nurse does not have time to read research” at the top 5 of barriers to research utilization. Heavy workload and lack of nursing staff are two major factors that hinder nurses from read research. Seventeen studies ranked the fourth item “inadequate facilities for implementation” at the top 5 of barriers to research utilization. Thirteen studies ranked the sixth item “physicians will not cooperate with implementation” at the top 5 of barriers to research utilization.

Nurses who were working at provincial hospitals in Greece, thought different from those working at central hospital relevant with the first item of the nurse subscale ($P < 0.05$) (Patiraki et al, 2004). Differentiations in nurses’ opinion were also cited by Brown et al. (2008). In the study they conducted, participated nurses occupying in geriatric care and the authors concluded that nurses (75%) rated the 5 of the 30 potential barriers as active. These results come in contrast with the results of another Swedish study conducted in a university hospital found that nurses (75%) rated only 2 barriers as active. Patiraki et al. (2004), proposed the development and the contribution of research centers, the availability of articles in hospital library, nurses’ participation in journal clubs and the placement of nurse researchers equally essential interventions for the initiation and the utilization of nursing research. Parahoo

(2000), proposed that “setting-specific” obstacles (like “facilities are inadequate for implementation”), can be addressed locally, whereas the “profession-related” obstacles (like “lack of autonomy”) need a different approach. Nurses should redefine their abilities and look for solutions through the relevant literature.

Research Subscale: The items of this subscale do not present any remarkable comments.

Presentation Subscale: The third item “research articles are not readily available” of the presentation subscale is the top barrier for four studies. The first item of this subscale “statistical are not understandable” is ranked as the fourth barrier by eight studies.

Other items: For nurses living in non-speaking English countries, English language of the published research papers is a problem. Probably nurses are not familiar with scientific terminology and English generally, so it is difficult for a portion of nurses to understand the research finding in another language from their native language (Patiraki et al, 2004). A hinder to research accessibility for Hong Kong nurses is the no provision of internet access to retrieve directly research papers from the ward they were working at, without spending time to the hospital library (Chau et al, 2008). This could be one of the reasons that many nurses (82%) to avoid the use of the hospital library (Brown et al, 2010).

Facilitators of research utilization

Iranian nurses consider facilitators of research utilization the support from nurses knowledgeable of research, opportunities to attend conferences, access to facilities (internet), economic resources (Patiraki et al, 2004) and other factors (Mehrdad et al, 2008).

Another motivating factor that mentioned above as a barrier can be a chance to learn research methods and process (Mehrdad et al, 2008). While nurses from Turkey and Australia, perceived as greater facilitator the sufficiency of time to implement and overview of research findings (Hutchinson & Johnston 2004, Tan et al, 2012).

A synthesis of higher nursing education, job position (leader or staff nurse), job satisfaction, autonomy of nurses, organization slack associated with innovation adoption, having and use of computer at home consider to be some predictors of research utilization (Wallin et al, 2006). Further, nurses participated in the study of Chau et al. (2008), ranked the follow factors enhancing of managerial support, the network support, advances in education, improve understandability of research reports and of availability of them, as the top 5 facilitator factors for research.

Another important characteristic is the increased use of critical thinking among research users. This indicates that a possible predictor of research use is the strengthening of new nurses' critical thinking (Wangensteem et al, 2011). The work tempo level was a great predictor of research utilization from nurses participated in the study of Kajermo et al. (2008). As the level of work tempo is growing, nurses feel that are hindered to research utilization.

Relevance for nursing staff and clinical practice

Nurse educators have a key role in a hospital, especially if the hospital is considered to be a Magnet one. Also, such settings may not be perceived from nurses as a barrier to research utilization in contrast with other facilities (Karkos & Peters, 2006). Similar perceptions with the above had the clinical nurse educators (n=122) who participated in another study (Strickland & O'Leary-Kelley, 2009). These studies presented low mean score at the subscale of settings of the barriers to research utilization scale. This means that such settings are promoting and suitable for implementing research evidence. Nurse educators can also train their students to be "critical thinkers and strong believers in research utilization" (Wangensteem et al, 2011) and coordinate unit-based journal clubs (O'Nan, 2011).

Nurse administrators and ward managers need to find ways to sustain the interest of nurses irreducible about research by encourage and support them for the

implementation of every detail of evidence (Moreno-Casbas et al, 2011, Tan et al, 2012). Also prioritization, continuous audit and feedback are useful strategies to keep activate their role (Chau et al, 2008, Moreno-Casbas et al, 2011). Wangensteem et al. (2011), in their paper highlighted the contribution of nurse administrators in the nurturing of newly graduated nurses critical thinking and the enhancing of their research attitudes and skills through critical thinking. Apart from critical thinking, novice nurses need a guide, who can be either a colleague or a nursing administrator (Chau et al, 2008).

Another part of their role is the clarification of nurses' responsibilities as part of health care team and the development of a professional identity. This is crucial, as one of the barriers to research utilization is the belief of nurses that physicians will not cooperate at the research utilization process (Parahoo & McCaughan, 2001, Andersson, et al, 2007, Kajermo et al, 2008). Dialogue can be used to serve this purpose (Bryar et al, 2003).

Certainly when research studies are supported financially, it is expected from nurses to participate frequently in researches' activities and likely to carried out studies in different countries (Parahoo, 2000, Patiraki et al, 2004, Tan et al, 2012).

Study limitations

There are several limitations to this study that should be mentioned. Firstly, references retrieved only from one scientific base. Surveys with low response rate (<70-80%) were taking into account. This low response rate may represent the negative attitude towards the nursing research. Also, this paper includes originals studies which conducted in one setting, but throughout the references there are studies which conducted in various settings. Another limitation is that all studies used the barriers to research utilization scale as firstly was used by Funk et al. (1991), alone or combined with another questionnaire and in many cases with additional subscale items. Finally, all procedures of the preparation of this study have been made by one author.

STUDY	RN SAMPLE	RESPONSE RATE	SETTING	DESIGN	INSTRUMENT
<i>Closs et al. (2000)</i>	n=1984	36%, n=712/1984	2 hospitals	E-mail survey	BRUS
<i>Kajermo et al. (2000)</i>	n=618	83%, n=600/718	School of nursing & 2 major teaching hospitals	Quantitative	BRUS
<i>Parahoo (2000)</i>	n=1368	52,6%, n=1368/2600	23 hospitals	Quantitative	BRUS
<i>Retsas (2000)</i>	n=400	50%, n=400/800	Hospital	Quantitative	BRUS
<i>Closs & Bryar (2001)</i>	n=2009	44,6%, n=2009/4501	5 hospitals	E-mail survey	BRUS
<i>Parahoo et al. (2001)</i>	n=1368, medical & surgical nurses	52,6%, n=1368/2600	23 hospitals	Quantitative	BRUS
<i>Oranta et al. (2002)</i>	n=253	80%, n=253/316	2 major Finnish hospitals	Quantitative	BRUS
<i>Bryar et al. (2003)</i>	n=2009	44,6%, n=2009/4501	Community & hospital	Quantitative	BRUS
<i>Kuuppelomäki & Tuomi (2003)</i>	n=400	67%, n=400/600	1 central hospital, 1 central university hospital and 10 community health centres	Quantitative	BRUS
<i>McCleary & Brown (2003)</i>	n=176	33,3%, n=176/528	Acute care pediatric teaching hospital	Quantitative	BRUS, EROS
<i>Carrion et al. (2004)</i>	n=47	53,4%, n=47/88	Forensic mental health hospital	Cross-sectional, descriptive	BRUS
<i>Glacken & Chaney (2004)</i>	n=169	39,6%, n=169/426	RN who enrolled for a nursing focused academic course with Trinity College, Dublin, Republic of Ireland,	Cross-sectional	BRUS
<i>Hutchinson & Johnston (2004)</i>	n=317	41%, n=317/761	Teaching hospital	Quantitative	BRUS
<i>Kirshbaum et al. (2004)</i>	n=263	76,2%, n=263/345	Breast Care Center	Quantitative	BRUS
<i>Lapierre et al. (2004)</i>	n=20	67%, n=20/30	PACU	Quantitative	BRUS
<i>Patiraki et al. (2004)</i>	n=231	78%, n=231/301	12 hospitals (general and cancer)	Cross-sectional	BRUS
<i>Fink et al. (2005)</i>	Presurvey n=215 Postsurvey n=239	24%, n=215/880 27%, n=239/880	Inpatient units	Descriptive, cross-sectional, presurvey and postsurvey	BRUS, RFQ
<i>Karkos & Peters (2006)</i>	n=275	47%, n=275/584	Magnet community hospital	Descriptive, quantitative	BRUS
<i>Thompson et al. (2006)</i>	n=1487	30%	Mixed	E-mail survey	BRUS, RUQ
<i>Baernholdt &</i>	n=38	35%,	Not mentioned	E-mail survey	BRUS

<i>Lang (2007)</i>		n=38/108			
<i>Andersson et al. (2007)</i>	n=113	80%, n=113/141	2 pediatric university hospitals	Quantitative	BRUS, PSDF
<i>Atkinson et al. (2008)</i>	n=271	25%, n=271/1100	Variety of settings	Descriptive, quantitative	BRUS
<i>Boström et al. (2008)</i>	n=140	67%, n=140/210	Care of older people	Cross-sectional	BRUS, RUQ
<i>Chau et al. (2008)</i>	n=1487	30%, n=1487/5000	Various clinics	Cross-sectional, correlational exploratory	BRUS, RUQ
<i>Kajermo et al. (2008)</i>	n=833	51%, n=833/1647	University hospital	Descriptive and correlational	BRUS, HMQ, QWC
<i>Mehrdad et al. (2008)</i>	n=410	Not mentioned	15 educational hospitals & nursing schools	Descriptive	BRUS
<i>Oh (2008)</i>	n=63	63 RN chosen from national data of 437 RN	CC, university hospital	Cross-sectional, e-mail survey	BRUS
<i>Schoonover (2009)</i>	n=79	21%, n=79/372	Community hospital	Descriptive	BRUS
<i>Strickland & O'Leary-Kelley (2009)</i>	n=122	41%, n=122/300	ACF/OACF	Descriptive	BRUS
<i>Yava et al. (2009)</i>	n=631	66,6%, n=631/947	9 hospitals (3 of them military)	Descriptive	BRUS
<i>Brown et al. (2010)</i>	n=974	75%, n=974/1301	4 hospitals	Cross-sectional	BRUS, EB PQ
<i>Kocaman et al. (2010)</i>	n=329	58%, n=336/529	University hospital	Descriptive, cross-sectional	BRUS
<i>Uysal et al. (2010)</i>	n=216	90%, n=216/240	Hospitals	Descriptive	BRUS
<i>Chan et al. (2011)</i>	n=984	3,6%, n=984/26990	Emergency Nursing Association	Cross-sectional, mail survey	BRUS, EMSC
<i>Moreno-Casbas et al. (2011)</i>	n=917	83%, n=917/1106	Hospitals, primary care center	Cross-sectional comparative	BRUS, NARQ
<i>O'Nan (2011)</i>	n=14	33%	Medical & surgical units	Quasi-experimental pre/postintervention, pilot study	BRUS
<i>Tan et al. (2012)</i>	n=1094	70%, n=1094/1559	Hospital	Cross-sectional	BRUS

Table 3. Methodological considerations of studies

RN=Registered Nurses, BRUS=Barriers to Research Utilization Scale, RUQ=Research Utilization Quality, EB PQ=Evidence-based Practice Questionnaire, PSDF=Professional Self Description Form, HMQ=Hospital Model Questionnaire, QWC=Quality Work Competence, NARQ=Nurses Attitudes towards Research and development Questionnaire, CCTDI=California Critical Thinking Disposition Inventory, EROS=Edmonton Research Orientation Scale, RFQ=Research Factor Questionnaire, EMSC=Emergency Medical Services for Children survey, CC=Critical Care, ACF=acute care facility, AOAC=affiliated outpatient ambulatory care facility, PACU=Post-anesthesia care unit.

Barriers to Research Utilization Scale items	TOP 5 BARRIERS				
	1 st	2 nd	3 rd	4 th	5 th
1. Nurse Subscale					
<i>The nurse is unaware of research</i>		Chan et al. (2011)	Hutchinson & Johnston (2004), Schoonover (2009),	Karkos & Peters (2006), Brown et al. (2010)	Closs & Bryar (2001), Strickland & O'Leary-Kelley (2009), Moreno-Casbas et al. (2011)
<i>The nurse doesn't feel capable of evaluating the quality of research</i>			Moreno-Casbas et al. (2011)		Glacken & Chaney (2004), O'Nan (2011) Before intervention,
<i>The nurse is isolated from colleagues with whom to discuss the research</i>	Boström et al. (2008)		Kajermo et al. (2000), Fink et al. (2005),		
<i>The nurse is unwilling to try new ideas</i>					
<i>The nurse sees little benefit from self</i>					
<i>There is not a documented need to change practice</i>			Oh (2008)	Uysal et al. (2010)	
<i>The nurse feels the benefit of changing practice will be minimal</i>					
<i>The nurse does not see the value of research for practice</i>	Kuuppelomäki & Tuomi (2003), Oh (2008)	Closs & Bryar (2001)			Oranta et al. (2002)
2. Setting Subscale					
<i>Insufficient time on the job to implement new ideas</i>	Closs et al. (2000), Retsas (2000), Bryar et al. (2003), Carrion et al. (2004), Kocaman et al. (2010), Brown et al. (2010)	Kuuppelomäki & Tuomi (2003), Hutchinson & Johnston (2004), Kirshbaum et al. (2004), Atkinson et al. (2008), Strickland & O'Leary-Kelley (2009), Oh (2008)	Parahoo (2000), Parahoo et al. (2001), Karkos & Peters (2006), Andersson et al. (2007), Chau et al. (2008)	Oranta et al. (2002), Fink et al. (2005), Schoonover (2009)	Kajermo et al. (2000), McCleary & Brown (2003), Mehrdad et al. (2008)
<i>The nurse does not have time to read research</i>	McCleary & Brown (2003), Hutchinson & Johnston (2004), Karkos & Peters (2006), Mehrdad et al. (2008)	Carrion et al. (2004), Schoonover (2009), Yava et al. (2009), Brown et al. (2010)	Glacken & Chaney (2004), Fink et al. (2005), Atkinson et al. (2008), Tan et al. (2012)	Kajermo et al. (2000), Kuuppelomäki & Tuomi (2003), Chau et al. (2008), Strickland & O'Leary-Kelley (2009),	Retsas (2000), Kirshbaum et al. (2004), Boström et al. (2008), Oh (2008), Chan et al. (2011)

<i>The nurse does not feel she/he has authority to change patient care procedures</i>	Parahoo (2000), Parahoo et al. (2001), Glacken & Chaney (2004), Fink et al. (2005), Andersson et al. (2007), Atkinson et al. (2008), Schoonover (2009), Strickland & O'Leary-Kelley (2009), Yava et al. (2009), Chan et al. (2011)	Retsas (2000), Bryar et al. (2003), Karkos & Peters (2006), Chau et al. (2008), O'Nan (2011)	Closs et al. (2000), Lapierre et al. (2004), Patiraki et al. (2004), Mehrdad et al. (2008), Brown et al. (2010)	Kocaman et al. (2010) McCleary & Brown (2003), Carrion et al. (2004), Hutchinson & Johnston (2004), Moreno-Casbas et al. (2011)
<i>Inadequate facilities for implementation</i>	Chau et al. (2008), Uysal et al. (2010)	Kajermo et al. (2000), Glacken & Chaney (2004), Boström et al. (2008), Mehrdad et al. (2008), Tan et al. (2012)	Retsas (2000), Kirshbaum et al. (2004), Yava et al. (2009), Kocaman et al. (2010)	Lapierre et al. (2004), Patiraki et al. (2004), Oh (2008) Closs et al. (2000), Carrion et al. (2004), Baernholdt & Lang (2007)
<i>Other staff are not supportive of implementation</i>		Baernholdt & Lang (2007)		Glacken & Chaney (2004) Tan et al. (2012), Yava et al. (2009)
<i>Physicians will not cooperate with implementation</i>	Lapierre et al. (2004)	Closs et al. (2000), Oranta et al. (2002)	Uysal et al. (2010), Bryar et al. (2003), O'Nan (2011) Before intervention,	Tan et al. (2012) Schoonover (2009), Kocaman et al. (2010), Andersson et al. (2007), Karkos & Peters (2006), Parahoo et al. (2001), O'Nan (2011) After intervention
<i>The nurse feels results are not generalizable to own setting</i>				Closs & Bryar (2001), Yava et al. (2009) Parahoo (2000), Uysal et al. (2010)
<i>Administration will not allow implementation</i>		Parahoo et al. (2001), Lapierre et al. (2004), Andersson et al. (2007)		Parahoo (2000)

3. Research Subscale

<i>Research has not been replicated</i>			O'Nan (2011) After intervention	Baernholdt & Lang (2007)
<i>Literature reports conflict results</i>				
<i>Research has methodological inadequacies</i>				

<i>Research reports are not published fast enough</i>			Baernholdt & Lang (2007)		Patiraki et al. (2004)
<i>Nurse is uncertain whether to believe the results of the research</i>					
<i>Conclusions drawn from the research are not justified</i>					Brown et al. (2010)
4. Presentation					
Subscale					
<i>Statistical analyses are not understandable</i>	Kirshbaum et al. (2004)	Parahoo (2000)	Closs & Bryar (2001), Oranta et al. (2002), Kuuppelomäki & Tuomi (2003), McCleary & Brown (2003),	Closs et al. (2000), Retsas (2000), Parahoo et al. (2001), Bryar et al. (2003), Andersson et al. (2007), Atkinson et al. (2008), Chan et al. (2011), O’Nan (2011) Before intervention	Hutchinson & Johnston (2004), Lapierre et al. (2004)
<i>Relevant literature is not compiled in one place</i>	Baernholdt & Lang (2007)	Lapierre et al. (2004), Patiraki et al. (2004), Uysal et al. (2010)	Carrion et al. (2004), Boström et al. (2008)	O’Nan (2011) After intervention	Kuuppelomäki & Tuomi (2003), Chau et al. (2008)
<i>Research articles are not readily available</i>	Kajermo et al. (2000), Closs & Bryar (2001), Patiraki et al. (2004), O’Nan (2011) After intervention	Fink et al. (2005)		Kirshbaum et al. (2004), Boström et al. (2008)	
<i>Implications for practice are not made clear</i>	Kuuppelomäki & Tuomi (2003), Oh (2008)	Closs & Bryar (2001)			Oranta et al. (2002)
<i>Research is not reported clear and readably</i>					
<i>Research is not relevant to the nurses’ practice</i>					
Other items:					
<i>Research amount is overwhelming</i>					Bryar et al. (2003), Atkinson et al. (2008)
<i>Articles are written in English</i>		Kocaman et al. (2010)			

Table 4. Ranking (top 5) of great or moderate barriers types measured by barriers to research utilization scale

Future Directions

Exploring perceptions of nurses populations that belong in different nursing domains (hospitals, nursing universities, primary health care) would provide particular results about the use of evidence in nursing (Yava et al, 2009). Also, the exploration of nursing administrators' perceptions about the barriers of research utilization is interesting (Kajermo et al, 2008). Concerning the methodology approach of the issue, it can be qualitative or quantitative. Both approaches offer a better understanding of the theme complexity.

Over the last two decades, barriers to research utilization have been identified to a large extent by nurse researchers. Subsequently, future studies should focus on interventions which assess the use of research evidence and the reduction of the barriers, since they are identified in the literature (Parahoo & McCaughan, 2001, Hutchinson & Johnston, 2004, Boström et al, 2008, Kajermo et al. 2010).

Conclusions

Initially, knowledge of research activities begins from the education that nurses receive. After that nurses' participation in conferences, reading original articles and make themselves originals articles are some steps close to research behavior. Apart from these, it is important for nurses to working in a research promote organization and cooperate with colleagues that care about research.

Research-based nursing practice and evidence-based practice need to be organized by nurses themselves. The effects of the adoption of such practices are valuable and result to the standardization of care, the effective provision of nursing care and enhancing nurses' clinical decision-making, critical thinking, autonomy and nursing profession generally.

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