Challenges associated with the implementation of the nursing process: A systematic review

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Abstract

Background: Nursing process is a scientific approach in the provision of qualified nursing cares. However, in practice, the implementation of this process is faced with numerous challenges. With the knowledge of the challenges associated with the implementation of the nursing process, the nursing processes can be developed appropriately. Due to the lack of comprehensive information on this subject, the current study was carried out to assess the key challenges associated with the implementation of the nursing process.

Materials and Methods: To achieve and review related studies on this field, databases of Iran medix, SID, Magiran, PUBMED, Google scholar, and Proquest were assessed using the main keywords of nursing process and nursing process systematic review. The articles were retrieved in three steps including searching by keywords, review of the proceedings based on inclusion criteria, and final retrieval and assessment of available full texts.

Results: Systematic assessment of the articles showed different challenges in implementation of the nursing process. Intangible understanding of the concept of nursing process, different views of the process, lack of knowledge and awareness among nurses related to the execution of process, supports of managing systems, and problems related to recording the nursing process were the main challenges that were extracted from review of literature.

Conclusions: On systematically reviewing the literature, intangible understanding of the concept of nursing process has been identified as the main challenge in nursing process. To achieve the best strategy to minimize the challenge, in addition to preparing facilitators for implementation of nursing process, intangible understanding of the concept of nursing process, different views of the process, and forming teams of experts in nursing education are recommended for internalizing the nursing process among nurses.

Key words: Challenge, education, nursing process, strategy

Introduction

Decade of 1950 in Europe coincided with a period during which nursing was gradually modified from hospital-based to university-based profession and became an independent medical field. In this period, experts on nursing science emphasized clinical models instead of models based on the medical profession for the development of nursing, and thus, the use of some theories such as Maslow theory of human motivation and hierarchy of basic human needs, Erickson's theory of psychosocial personality development, and Selye's theory of physiologic stress adaption started to be considered more. Despite the high values of these theories, medical experts found that the use of these models was not sufficient for professional development of nursing and there was a need for a framework dedicated to nursing, which represented the nursing profession as a unique field. In 1955, Hall used the term "nursing process" and argued that by applying the nursing process as a framework for patients' caring, the nursing care can be fully offered to patients.[1] Following the efforts made in this regard, in 1961, Orlando presented three steps to implement nursing care based on the nursing process, including client's behavior, reaction of the nurse, and nursing actions.[2] Over time, various authors and scholars have proposed different forms of the nursing process, but the latest is the six-step nursing process as a step provided by the American Nurses Association (ANA) that was based on evaluation and recognition, nursing diagnosis, specifying

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the objectives and expected outcomes, as well as planning, implementation, and evaluation.[3] It should be noted that the different phases of the nursing process are not separated. The relationship between the six steps of nursing process can be compared to a large container with six chambers, in which each chamber is connected with others through a window. Therefore, although the chambers (steps) seem to be independent from each other, they eventually interact with each other and are not separated.[3]

Nursing process is now running as a standard for nursing in healthcare systems in most developed countries. In the United States, all nursing students who are enrolled in the first year of nursing are trained using this model.[3] The use of the nursing process helps in making and planning a good, clear, and effective nursing care that is finally effective for improvement of the quality of patients' care.[4] But despite the results obtained, some studies have shown that nursing process in practice is faced with numerous challenges.[5] Some experts believe that nursing process in the present framework is not clear, is time-consuming, and is difficult to perform.[6,7] In order to find the determinants of appropriate implementation of the nursing process, few studies have been conducted.[8] In the lack of knowledge about challenges associated with the implementation of the nursing process, it is not to be develop the nursing process.[9] The main objective of this study was to determine the major challenges associated with the implementation of the nursing process. The results of the present study can be useful to develop nursing process in clinical setting.

MATERIALS AND METHODS

Search strategy and article selection
For this systematic review, we explored 1114 published papers in nursing process that fulfilled the eligibility criteria by searching in some databases such as Iran medix, SID, Magiran, PUBMED, Google scholar, and Proquest. Our research was restricted to English language studies published after 1970 and Persian language studies published after 1990.

The main keywords used for the search included: nurse, nursing process, and systematic review. Review of literature and selection of relevant articles was carried out in three steps. At first, using keywords, 1114 articles were found. During the second step, all articles were screened one by one by surveying the abstract of articles and based on inclusion and exclusion criteria [Table 1]. Then, 125 articles were chosen to be surveyed. Finally, based on the above-mentioned criteria, only the articles that included the desired conditions and whose full text was accessible by Tabriz University of Medical Sciences were chosen.

Inclusion criteria
Studies were included and eligible if the papers were associated with problems related to the nursing process, were original or review articles, and access to the full text of the articles was available.

Exclusion criterion
Studies that focused only on a particular part of the nursing process (i.e. the difference between planning and diagnosis).

Analysis of studies
In this step, data collected from the studies included authors' names, year, purpose, basic concepts, methodology of the studies (study design, data collection, and analysis), the study sample, the response rate, and also validity and reliability of the study. The data were collected regularly in data files and were used as raw data. The validity of analyses was confirmed on agreement of the researchers.

Focus of the studies
The focus of the studies can be classified into six categories. Some studies focused on the challenges related to the effects of impediments or individual or managerial facilities in implementation of the nursing process.[5,8-12] Another group of studies focused on the challenges associated with the outcome of the implementation of the nursing process in clinical setting,[13-17] the use of computers in recording and performing the process,[18-25] different attitudes of the teams toward the implementation of the nursing process,[7-26] different understanding of the nurses and specialists on the concept of nursing process,[6,27-30] and its effects on implementation phases manner of nursing process and challenges associated with the recording of nursing process[31] [Figure 1].
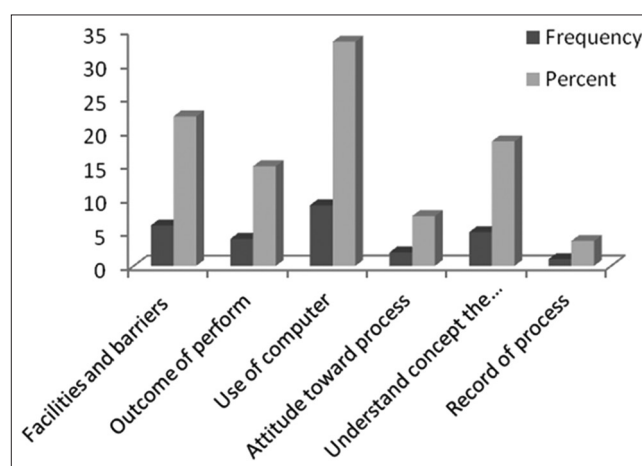

Figure 1: Frequency and percent of the focus of studies on challenges related to performing the nursing process from 1970 to 2013 (from 1370 to 1392 on Hijri Shamsi date)

Table 1: List of considered articles related to challenges in implementation of the nursing process from 1970 to 2013 (from 1370 to 1392 on Hijri Shamsi date) in second retrieval phase

Author	Year	Ref.	Author	Year	Ref.	Author	Year	Ref.	Author	Year	Ref.
Nouhi	2010	[12]	Ghafouri	2012	[10]	Akbari	2011	[41]	Huckabay	2009	[3]
Naehring	1991	[42]	Shourideh	2011	[43]	Akbari	2011	[13]	Barnum	1987	[44]
Dal Sasso	2013	[19]	Guedes	2012	[7]	Molina	2012	[27]	McHugh	1991	[45]
Ofi	2012	[46]	Turkel	2012	[47]	Pokorski	2009	[16]	White	1993	[48]
Sola	2011	[49]	Yeh	2009	[20]	Jenkins	2008	[50]	Walker	1980	[51]
Yu	2006	[50]	Kim	2005	[31]	Potter	2004		Casey	1994	[52]
Faust	2002	[53]	Hobbs	2000	[54]	Ammenwerth	2001	[21]	Beaupre	1988	[55]
Attree	1999	[30]	Katherason	1998	[30]	Sahlstedt	1999	[56]	Currie	1984	[57]
McHolm	1998	[58]	Murphy	1997	[59]	Calladine	1996	[60]	Masso	1990	[61]
Varcoe	1996	[6]	Pinder	1994	[62]	Davis	1994		Sung	2003	[22]
Rowden	1983	[63]	Mitchell	1984	[64]	Whelton	1999	[65]	Alasalmi	2008	[66]
Park	2009	[67]	Bong	2008	[68]	Wingard	2005	[17]	Silva	2011	[69]
Crossetti	2003	[25]	Lukes	2010	[14]	Walters	1989	[70]	Jenkins	2007	
Bryar	1987	[71]	Tanner	2000	[29]	Walters	1989	[70]	Hiraki	1997	[73]
Cuesta	1983	[74]	Henderson	1982	[75]	Hoeman	1996	[76]	Claflin	1992	[77]
Latimer	1995	[78]	Henderson	1987	[79]	Lauri	1982	[80]	Moraes	2010	[15]
Chenitz	1984	[81]	Woolley	1990	[82]	Carlson	1972	[83]	Castledine	2011	[84]
Moss	1988	[85]	Lambert	1987	[86]	Magnan	2009	[87]	Mason	1988	[24]
Pesut	2006	[28]	Goodwin	1975	[88]	Brennan	1972	[89]	Galante	1987	
Carthy	1981		Dolan	1991	[90]	Shannon	1989	[91]	Macri	1986	[92]
Webb	1981	[93]	McHugh	1987	[94]	Rauen	1990	[95]	Persons	1987	[96]
Yu	2006	[97]	Bernhart	2012	[98]	Grennfild	1987	[99]	Tóthová		[100]
McGreevy	1980	[101]	Pompeo	2009	[102]	Rayfield	2013	[103]	Hao	2013	[104]
Akinsanya	1988	[48]	Lillesand	1983	[105]	Vogel	1988	[106]	Oreo	1994	[107]
Fox-Ungar	1989	[108]	Lukes	2010	[14]	Cunning	1986	[109]	Kahouei	2008	[18]
Castledine	1981	[110]	Ungar	189	[108]	Mangare	2012	[111]	Medina	2011	[33]
Goldmann	1990	[112]	Rowden	1984	[113]	Crossetti	2003	[25]	Vaillancourt	1994	[114]
Evoy	2004	[115]	Bailey	1982	[116]	Vaillancourt	1994	[114]	Dayem	1990	[117]
Katherason	1998	[118]	Steck	1992	[119]	Steck	1990		Haas	1984	[120]
Knight	1974	[121]	Farkas	1990	[122]	Sperandio	2009	[123]	Bandell	2012	[124]
Henrikson	1998	[125]	Hollers	2004	[126]	Takahashi	2008	[5]	Yeh	2009	

Types of studies

Descriptive method was the main methodological method used in the assessment of studies.[5,7,10-12,16,18,31-33] The tool used in this assessment in the majority of studies was a questionnaire.[5,7,10-12,16,18,31] In a descriptive study, human factors engineering was applied to collect information[32] and in another study, reviewing patients' recorded files was the basis of data collection.[16] In another descriptive study, the method of designing and implementing software systems installed on mobile was described and interviews and observations of nurses were used to describe and evaluate the performance of the system.[33] In three qualitative articles, the main method for collection of information was interview.[8,9,27] The structure of three other studies in which the questionnaire was used was experimental or quasi-experimental.[13,15,20] The main approach in six papers was review approach,[6,17,25,28-30] and in four articles was interventional approach with unclear methodology for data collection[19,21,22,24] [Figure 2].

Participants in the studies

Some of the studies were performed as reviews,[6,17,25,28-30] or the main purpose in some other studies was describing the design and development of a new tool (using a computer program) to help facilitate the nursing process.[15,22] But most participants in the studies were nurses.[7,9,13,15,20-24,27,32] In a study, nurses and managers and in another study, nurses[12] and other personnel were the participants.[18] In two studies, faculty members and nursing students[10,26] and in another study, faculty members, managers, and nursing students were the main participants[8] [Figure 3].
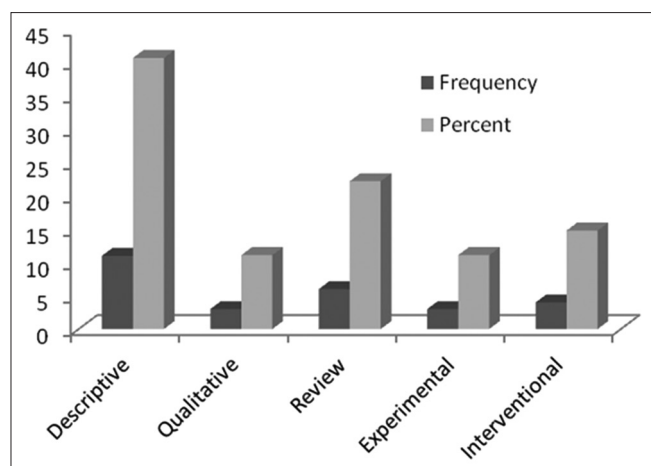
Figure 2: Frequency and percent of the types of studies on challenges related to performing the nursing process from 1970 to 2013 (from 1370 to 1392 on Hijri Shamsi date)
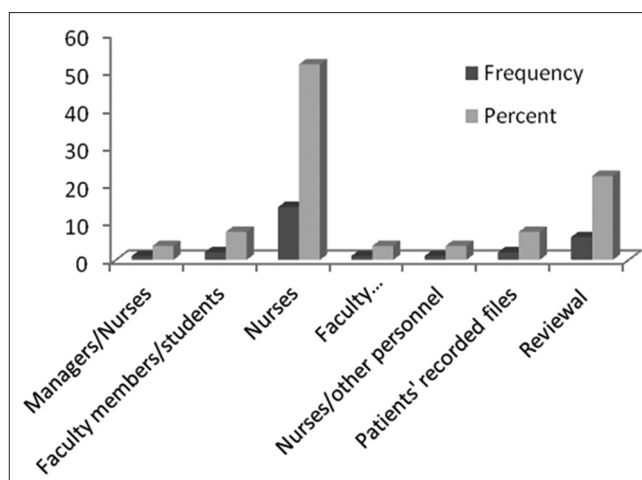

Figure 3: Frequency and percent of the participants in studies on challenges related to performing the nursing process from 1970 to 2013 (from 1370 to 1392 on Hijri Shamsi date)

Reliability and validity of the studies

Reliability and validity of most studies was clearly described. In the study of Ammenwerth *et al.*, the tool used was a standard questionnaire, but did not have a clear explanation of its details.[21] In Medina *et al.*'s study, the focus was on describing a new tool (software installed on the phone) to facilitate the implementation of the nursing process with little explanation regarding the validity or accuracy of the tools used to obtain views of nurses who used mobile.[23] In six studies, reliability and validity of the studies were not comprehensive described.[5,15,22,24,26,34] Among three qualitative studies, strategies used to increase the validity of the study were not clearly described in one study [Table 2].

RESULTS

Results of the studies showed that the differences in understanding the meaning of nursing process by members of the healthcare teams resulted in some challenges in the administrative proceedings of the nursing process.

Challenges about philosophical nature of the nursing process

One of the most significant studies in this field was that of Varceo *et al.*[6] In this study, criticism of the nursing process was mainly on the philosophical nature of the nursing process. Based on the viewpoints of these critics, the origin of the philosophical nature of nursing was positivism and empiricism. Nursing philosophy emphasizes the science as a source of knowledge and, thus, focus is less on intuition during clinical judgments. In this study, unbalanced distribution of power is introduced as a challenge in the nursing process, as nursing process is nurse-centered in the view of some critics and is patient-centered in the view of other critics. The first group believes that excessive focus on the power of nurses may reduce the coordination between

Table 2: Reliability and validity of studies on challenges related to performing the nursing process from 1970 to 2013 (from 1370 to 1392 on Hijri Shamsi date)

Study (authors)	Validity of study	Reliability of study
Akbari *et al*.	Content validity	Test-retest
Akbari *et al*.	Content validity	Test-retest
Noohi *et al*.	Content validity	Test-retest
Ghafouri *et al*.	Content validity	Test-retest
Kahouei *et al*.	Content validity	Test-retest
Guedes *et al*.	Internal consistency	Clearly not mentioned
Pokorski *et al*.	Internal consistency	Clearly not mentioned
Atashzadeh *et al*.	Use of Guba and Lincoln criteria (qualitative study)	
Granero-Molina *et al*.	Use of Guba and Lincoln criteria (qualitative study)	

the different members of the healthcare team within patient care. The second group also believes that patient-centered approach may lead to lack of protection of patient privacy and, thus, the patient has to disclose all personal information to participate in the care process. Challenges related to the professional performance formed the third part of criticism. Critics believe that nurses use the nursing process for development of their profession and, thus, the patients' benefits are less considered. In the opinion of some critics, nursing process has been developed as a deductive process and is not based on nurse's actual performance.

Challenges about the lack of understanding of the true meaning of the nursing process

Another challenge is the lack of understanding of the true meaning of the nursing process. In many cases, the nursing process and nursing is considered to be uniform.[6] Tanner[29] criticizes considering the nursing process and critical thinking as equivalent. Varceo[6] also believes that the cause of criticism of the nursing process is lack

of understanding of the meaning of the nursing process. Furthermore, there are numerous definitions of the nursing process. For instance, some researchers define nursing process as dynamic and some others define it as a linear process; the first group emphasizes on the processing nature, while the second group emphasizes on the problem-solving nature of the nursing process.[6] The descriptive or prescriptive nature of the nursing process depends on different philosophical outlooks of people about the nursing process.[6,28] In response to criticism on the linearity of decision-making process, Atree[30] stresses on lack of sufficient evidence for this claim. Besides, it has been revealed that nurses apply nursing process as a tool for clinical decisions successfully. But people's competence influences non-linear decision-making process. On the other hand, more sophisticated people use the linear process less. In the opinion of Atree, it can also be considered that among physicians, less-experienced physicians use more linear process in clinical observations and evaluations.

Challenges related to management system

Factors relating to the management system and also individual factors as barriers or facilitators of the nursing process can cause challenges in implementing this process.[10-12,35] Lack of proper knowledge on the concept or on how to implement the process has been found to be the most important factor in preventing a proper implementation of the process.[10-12,27] Domination of physicians in management systems,[27] lack of adequate support from the management systems,[10-12,27] and lack of enough time for the process due to large number of patients can cause an impediment to perform the nursing process. Sometimes, there is a difference between what is taught in school and what is actually being done in clinics, creating some challenges.[9]

Challenges about the nurses' attitudes toward the nursing process

Nurses' attitudes toward the nursing process can be effective on implementing the process. In this regard, in two studies,[26,27] female students had more positive attitudes than male students regarding the ability to use the nursing process in providing high-quality caring. Most nursing students (80%) believed that nursing process was able to uniquely define nursing actions and presented an appropriate image of nursing. However, only 50% of students thought that using the nursing process is only a way for providing nursing cares. In the viewpoints of 14% of students, nursing cares on nursing process can be very difficult.[26]

Challenges related to determination of nursing diagnosis

Assessment of the effects of performing nursing process in clinical setting can be helpful for determination of challenges related to this process. One of the challenges faced in the field is nursing diagnosis by nurses.[15,16] The results of the study of De Moraes[15] showed that only 48.5% of the studied reports of nurses were recorded as nursing diagnosis that was associated with the method of patients' evaluation. In fact, failure to obtain a proper history of the patient[15,16] or spending too much time to obtain the earliest history of the patient can be challenging in nursing diagnosis.[15,17] Receiving appropriate education in relation to the nursing process can lead to improvement in quality of the provided cares.[36] In ideal conditions, meeting the client needs would be done on an individual basis. But if the nurse has to take care of several patients simultaneously, this concurrent caring can cause some challenges in the nursing process and even impair nursing intellectual integrity in clinical decision-making process.[32]

Challenges related to recording steps of the nursing process

Another challenge associated with the nursing process is related to the process of recording steps of the nursing process. It has been shown that despite awareness of the need for registration of nursing process, interventions, and outcomes, nursing records may not be completely provided.[31] Use of computers and relevant software has been introduced as an approach to reduce the time and simplify the process of recording.[20,24,25] The result of Ammenwerth's study showed that nurses' tendency to the use of nursing process was linked to the use of nursing care planning system aided by computer. On the other hand, most nurses agree on the use of nursing process; but because it takes a lot of time, they are less willing to use it. However, by using the computer system, nurses are able to quickly plan the nursing cares and, thus, spend less time on the recording process. In some studies, theoretical basis was used to design facilitator software for performing the nursing process. The theoretical basis used was Virginia Henderson theory. The ability of recording vital signs with the date of record and name of controller nurse, having a guide to plan care based on the entered data, and the ability to transform quantitative data into qualitative are the main characteristics of this tool.[33] However, the use of computerized systems may have some potential limitations including lack of access to adequate numbers of computers, lack of appropriate space, and lack of sufficient knowledge of all nurses in the use of computers.[20] During the last decade, using a computer system for nursing records was started in Iran. The results of a descriptive study in 2008 showed that less than half of the nurses had partial satisfaction in the effect of a computerized hospital information system on patient care activities and most personnel did not record the data and entered data on characteristics of the patient in his/her nursing reports. The main reasons for this were insufficient time and sense of reworking in the task. Nurses believed that this system did not reduce the use of paper and, thus, led to reworking.[18]

DISCUSSION

Nursing process has been frequently accepted by nursing experts as a scientific method for providing nursing cares with a high quality. According to the standards of nursing actions in the United States and Canada, performing professional nursing cares requires using the nursing process and, thus, participation of nurses in activities that lead to increase in knowledge toward nursing process is strongly recommended.[37] However, evidences have shown that in most cases, nursing process is not systematically performed,[16] and sometimes the nursing process is replaced by a routine caring performance.[19] Number of patients, number of nurses, and having sufficient knowledge toward nursing process are the important factors affecting the nursing process. Lack of nurses' knowledge plays a key role on lack of adequate enforcement of nursing process. Most of the nurses easily use the nursing process when caring the special patients individually; but with increase in the number of patients, this process may not be used.[14] Lack of knowledge and skills among nurses, doctors' domination, lack of proper record system, and lack of adequate support institutions have been known as the most significant obstacles in performing this process.[27] In fact, one of the main challenges is the level of nurses' knowledge.[10-12] Results of some studies show that following the training of nurses in relation to the implementation of nursing process, nurses' ability to its use and recognize nursing diagnosis have been increased.[36,38] Thus, it seems that by continuing education programs for nurses and with emphasis on education for nursing students, the problems associated with nursing process are minimized. However, learning process in nursing and nursing process are two different categories. For example, some nurses perform the planning and implementing steps, but are not able to perform the evaluating step. Determination of nursing diagnosis is one of the main challenges faced by nurses in performing the nursing process.[14,15] Most of the nurses have appropriate knowledge theoretically, but cannot perform it practically.[15] Varceo believed that criticism of the nursing process was regarding the philosophical nature of the nursing process and the main reason for this criticism is lack of understanding of the meaning of the nursing process.[6] In this regard, the experiences of nurses on understanding the meaning of nursing are contradictory.[15] Thus, it has been argued that increase of knowledge and educating nurses are not enough for implementation of nursing process. Acquiring knowledge means achieving awareness, but understanding needs to develop meaningful relationships between types of knowledge and skills.[39] As long as the knowledge of nursing process is not properly internalized, challenges associated with the implementation of the nursing process will continue. Internalization means entering external subjects and elements in psychological structures that lead to structural changes or integration with existing structures.[40] For recording and implementing a systematic nursing process, using paper-based tools is common, but the use of these tools has met with some criticism. The large volume of notes and the low quality of the provided records have been emphasized as the negative aspects. In recent years, some efforts have been made in order to use computer program to help perform and record the nursing process. The use of ready and designed plans for nursing process results in project planning with greater efficiency and speed, as well as in clearing the steps of nursing process. But it should be noted that the management of the use of computers is dependant to the number of patients and clinical conditions of the wards. If the number of patients is small or the location of computers is considered to be work rooms, a few computers would suffice; but if the computer needs to be kept beside the patient's set, the use of movable computers or using software installed on the mobile seems to be necessary. Also, coordination should be considered in all parts of care systems for using computer. On the other hand, physicians and other healthcare team members will also be able to access the computer, leading to acceleration of the process of patient care.[21]

CONCLUSION

Analysis of the present studies showed different challenges in performing the nursing process. Intangible understanding of the meaning of nursing process, difference in attitudes toward the nursing process, lack of awareness of the nurses, and supportive management of problems related to recording the nursing process are the main challenges in reviewed literatures. The use of software programs is a strategy for time management as well as for facilitating and accelerating the implementation of the nursing process.

The main limitation of the present study was lack of access to full-text articles. It is recommended to perform more studies considering this limitation. Because intangible understanding of the meaning of nursing process has been identified as the most important challenge, it is also recommended to consider education of nursing process besides preparing facilitators for enforcement of nursing process. These strategies result in internalizing and understanding the concept of the nursing process. Forming the team of experts in nursing education is recommended as the best way to minimize the current challenges.

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REFERENCES

1. Johnson BM, Webber PB. An Introduction to Theory and Reasoning in Nursing: Lippincott; 2001.
2. Program Son RB. Transition to Professional Nursing Available from: http://www.chua2.fiu.edu/faculty/phillips/nur3055/TransNurProcess.htm. [Last cited on 2013 Jul 14].
3. Huckabay LM, editor. Clinical reasoned judgment and the nursing process. Vol. 44. Nursing Forum; 2009. p. 72-78.
4. Potter PJ, Frisch N. Holistic assessment and care: Presence in the process. Nurs Clin North Am 2007;42:213-28.
5. Takahashi AA, Barros AL, Michel JL, Souza MF. Difficulties and facilities pointed out by nurses of a university hospital when applying the nursing process. Acta Paulista de Enfermagem 2008;21:32-8.
6. Varcoe C. Disparagement of the nursing process: The new dogma? J Adv Nurs 1996;23:120-5.
7. Guedes Ede S, Turrini RN, de Sousa RM, Baltar VT, da Cruz Dde A. Attitudes of nursing staff related to the nursing process. Rev Esc Enferm USP 2012;46:130-7.
8. Atashzadeh Shorideh F, Ashktorab T, Yaghmaei F. Iranian intensive care unit nurses' moral distress: A content analysis. Nurs Ethics 2012;19:464-78.
9. Ledesma-Delgado E, Mendes MM. The nursing process presented as routine care actions: Building its meaning in clinical nurses' perspective. Rev Lat Am Enfermagem 2009;17:328-34.
10. Ghafouri Fard M, Haririan H, Aghajanloo A, Akbari M, Shirvani Y. Obstacles of Nursing Process Application from Perspective of the Nursing Instructor and Nursing Students in Zanjan Faculty of Nursing and Midwifery. J Med Educ Dev 2012;5:69-77.
11. Akbari M, Shamsi A. A survey on nursing process barriers from the nurses' views on intensive care units. Iran J Crit Care Nurs 2011;4:181-6.
12. Noohi E, Karimi H, Najmaei E. Application obstacles of nursing process from view of the nursing managers and interns in Kerman University of Medical Sciences. J Qual Res Health Sci 2010;10:52-8.
13. Akbari Kaji M, Farmahani Farahani B. The effect of nursing process education on nursing care quality of schizophrenic patients. KAUMS Journal (FEYZ) 2011;15:32-7.
14. Lukes E. The nursing process and program planning. AAOHN 2010;58:5-7.
15. De Moraes Lopes MH, Higa R, Dos Reis MJ, de Oliveira NR, Christóforo FF. Evaluation of the nursing process used at a Brazilian teaching hospital. Int J Nurs Terminol Classif 2010;21:116-23.
16. Pokorski S, Moraes MA, Chiarelli R, Costanzi AP, Rabelo ER. Nursing process: From literature to practice. What are we actually doing? Rev Lat Am Enfermagem 2009;17:302-7.
17. Wingard R. Patient education and the nursing process: Meeting the patient's needs. Nephrol Nurs J 2005;32:211-4.
18. Kahouei M, Soleimani M, Qazvi S, Alaei S, Kahooei M, Soleimani M, *et al.* Views, behavior and satisfaction of the nurses and other hospital ward personnel about the effectiveness of computer systems of hospital information on caring process. Health Inf Manage 2008;4:193-202.
19. Dal Sasso GT, Barra DC, Paese F, Almeida SR, Rios GC, Marinho MM, *et al.* Computerized nursing process: Methodology to establish associations between clinical assessment, diagnosis, interventions, and outcomes. Rev Esc Enferm USP 2013;47:242-9.
20. Yeh SH, Jeng B, Lin LW, Ho TH, Hsiao CY, Lee LN, *et al.* Implementation and evaluation of a nursing process support system for long-term care: A Taiwanese study. J Clin Nurs 2009;18:3089-97.
21. Ammenwerth E, Kutscha U, Kutscha A, Mahler C, Eichstädter R, Haux R. Nursing process documentation systems in clinical routine-prerequisites and experiences. Int J Med Inform 2001;64:187-200.
22. Sung YH, Cho MS, Jang MR, Hong MS. Development of Computer-based Nursing Process Documentation System Using NNN Linkage. J Korean Soc Med Inform 2003;9:402-5.
23. Medina J, Ruiz-Lozano M, Delgado M, Vila A. A Fuzzy Temporal Rule-based System for handling the Nursing Process on mobile devices. Expert Syst Appl 2012;39:10479-88.
24. Mason EJ, editor Computer Facilitated use of the nursing process to improve the productivity of nurses. Proceedings of the Annual Symposium on Computer Application in Medical Care; American Medical Inform Association 1988.
25. Crossetti MdG, Vieira FD, Rodegheri M, d'Avila ML, Proença MC. A Computerized Nursing Process Support System in Brazil. Int J Nurs Terminologies Classifications 2003;14:58-60.
26. Anonymous. Nursing Students, Nursing Process and Quality Care. Nurs J India 2007;98:1.
27. Granero-Molina J, Fernández-Sola C, Peredo de Gonzales MH, Aguilera-Manrique G, Mollinedo-Mallea J, Castro-Sánchez AM. Nursing process: What does it mean to nurses from santa cruz (Bolivia)? Rev Esc Enferm USP 2012;46:973-9.
28. Pesut B, Sawatzky R. To describe or prescribe: Assumptions underlying a prescriptive nursing process approach to spiritual care. Nurs Inquiry 2006;13:127-34.
29. Tanner CA. Critical thinking: Beyond nursing process. J Nurs Educ 2000;39:338-9.
30. Attree M, Murphy G. Nursing process: Paradigm, paradox or Pandora's box? Nurs Educ Today1999;19:592-7.
31. Kim YJ, Park H. Analysis of nursing records of cardiac-surgery patients based on the nursing process and focusing on nursing outcomes. Int J Med Inform 2005;74:952-9.
32. Potter P, Boxerman S, Wolf L, Marshall J, Grayson D, Sledge J, *et al.* Mapping the nursing process: A new approach for understanding the work of nursing. J Nurs Adm 2004;34:101-9.
33. Medina-Valverde MJ, Rodríguez-Borrego M, Luque-Alcaraz O, de la Torre-Barbero MJ, Parra-Perea J. Assessment of a software application tool for managing nursing care processes in the period 2005-2010. Enferm Clin 2011;22:3-10.
34. Kim HS. Development and Application of a Computerized Nursing Process Program for Orthopedic Surgery Inpatients: NANDA, NOC, and NIC Linkages. J Korean Acad Nurs 2005;35:979-90.
35. Asistenciales E. The nursing process presented as routine care actions. Rev Lat Am Enfermagem 2009;17:328-34.
36. Kaji MA, Farahani BF. The effect of nursing process education on nursing care quality of schizophrenic patients. Feyz 2011;15:1.
37. Munro N. Evidence-based assessment: No more pride or prejudice. AACN Adv Crit Care 2004;15:501-5.
38. Hasson H, Arnetz JE. The impact of an educational intervention for elderly care nurses on care recipients' and family relatives' ratings of quality of care: A prospective, controlled intervention study. Int J Nurs Stud 2008;45:166-79.
39. AISJ. What is the difference between knowing and understanding? Available from: http://www.tw.aisj-jhb.com/teaching/2012/05/09/what-is-the-difference-between -knowing-and -understanding/. [Last cited on 2013 Aug 4].

40. Jafari A. Relationship between religious orientation (internal-external) methods to deal with stress among students. Behav Sci 2009;1:91-114.
41. Khorasgan I. A Survey on Nursing Process Barriers from the nurses' view of Intensive Care Units. Iran J Crit Care Nurs 2011;4:181-6.
42. Naehring M. The Nursing Process: Watching It Happen at Woodland Memorial Hospital. J Qual Assur 1991;13:20-1.
43. Shourideh FA, Ashktorab T. Factors Influencing Implementation of Nursing Process by Nurses: A Qualitative Study. Knowl Health J 2011;4:23-6.
44. Barnum BJ. Holistic nursing and nursing process. Holist Nurs Pract 1987;1:27-35.
45. McHugh MK. Does the nursing process reflect quality care? Holist Nurs Pract 1991;5:22-8.
46. Ofi B, Sowunmi O. Nursing documentation: Experience of the use of the nursing process model in selected hospitals in Ibadan, Oyo State, Nigeria. Int J Nurs Practice 2012;18:354-62.
47. Turkel MC, Ray MA, Kornblatt L. Instead of Reconceptualizing the Nursing Process Let's Re-Name It. Nurs Sci Q 2012;25:194-8.
48. White A. The nursing process: A constraint on expert practice. J Nurs Manag 1993;1:245-52.
49. Fernández-Sola C, Granero-Molina J, Aguilera-Manrique G, Peredo-de Gonzales M, Castro-Sánchez A, Perez Galdeano A. Strategies to develop the nursing process and nursing care plans in the health system in Bolivia. Int Nurs Rev 2011;58:392-9.
50. Jenkins JB, Smith EL. Creating a Successful Certification Examination Review Program: The Nursing Process Approach. J Nurses Staff Dev 2008;24:4-9.
51. Walker L, Nicholson R. Criteria for evaluating nursing process models. Nurs Educ 1980;5:8-9.
52. Casey M, Hendricks-Thomas J. Health assessment and the nursing process: A means to an end? Contemp Nurse 1994;3:13-6.
53. Faust C. Orlando's deliberative nursing process theory: A practice application in an extended care facility. J Gerontolog Nurs 2002;28:14-8.
54. Hobbs CF, Hardinge TT. Using the Nursing Process to Implement A Y2k Computer Application. J Nurses Staff Dev 2000;16:227-31.
55. Beaupre BA. An administrative marketing strategy: A different perspective on the nursing process. J Nurs Adm 1988;18:37-41.
56. Sahlstedt S, Adolfsson H, Ehnfors M, Källström B. Nursing process documentation--effects on workload and quality when using a computer program and a key word model for nursing documentation. Stud Health Technol Inform 1997;46:330-6.
57. Currie CT. Conference Report: The nursing process: Revolutionary philosophy or passing phase? BMJ 1984;289:1218-9.
58. McHolm FA, Geib KM. Application of the Neuman systems model to teaching health assessment and nursing process. Int J Nurs Terminol Classif 1998;9:23-33.
59. Murphy JA, Ahlstrom JS. Nursing process redesign with the implementation of a computer based patient record in the ambulatory setting. Stud Health Technol Inform 1997;46:323-9.
60. Calladine ML. Nurse process for health promotion using King's Theory. J Community Health Nurs 1996;13:51-7.
61. Masso M. Nursing process: Help or hindrance? Aust Adv Nurs 1990;7:12.
62. Pinder PM. Protocols Constructed around the Nursing Process 1: Asthma. J Am Coll Health 1994;43:133-5.
63. Rowden R. The nursing process debate. Two. Doctors can work with the nursing process: A reply to Professor Mitchell. Nurs Times 1983;80:32-4.
64. Mitchell J. Is nursing any business of doctors? A simple guide to the nursing process. Br Med J 1984;288:216-9.
65. Whelton BJ. An operationalization of Martha Rogers' theory throughout the nursing process. Int J Nurs Stud 1979;16:7-20.
66. Alasalmi A, Martikainen O, Kuroda T, Takemura T, Kume N, Yoshihara H, et al., editors. Core nursing process improvement enabled by wireless services. Wireless Days, 2008.
67. Park I, Yoo C, Joo Y, Woo K, Choi W, Kang H, et al. Evaluation of the completeness of the nursing process for patients having gastrectomy using electronic nursing records. Stud Health Technol Inform 2009;146:739-40.
68. Bong MR, Lee YS, Park KO, Ahn YH, Kwon CY. A clinical-decision support system for the nursing process in the ENR. Stud Health Technol Inform 2008;146:815-6.
69. Silva RS, Oliveira TdCP, Araújo MS. Implementation of the nursing process in a patient with congestive heart failure: Report study. Journal of Nursing UFPE on line 2011;5:266-72.
70. Walters NJ. Roy's Adaptation model of the nursing process: A Clinical Application for Wellness Promotion. Washington, DC: Distributed by ERIC Clearinghouse, 1989. p. 110.
71. Bryar R. The nursing process: A literature review. Midwifery 1987;3:109-16.
72. Young CE. Intuition and nursing process. Holistic Nurs Pract 1987;1:52-62.
73. Hiraki A. A response to Colleen Varcoe: Disparagement of the nursing process as dogma. J Adv Nurs 1997;25:865-6.
74. Cuesta C. The nursing process: From development to implementation. J Adv Nurs 1983;8:365-71.
75. Henderson V. The nursing process–is the title right? J Adv Nurs 1982;7:103-9.
76. Hoeman SP. Rehabilitation nursing: Process and application. J Infus Nurs 1996;19:108.
77. Claflin N. Integrating the Nursing Process into a Nursing Quality Improvement Program. J J Healthc Qual 1992;14:14-9.
78. Latimer J. The nursing process re-examined: Enrolment and translation. J Adv Nurs 1995;22:213-20.
79. Henderson V. Nursing process-a critique. Holist Nurs Pract 1987;1:7-18.
80. Lauri S. Development of the nursing process through action research. J Adve Nurs 1982;7:301-7.
81. Chenitz WC, Swanson JM. Surfacing nursing process: A method for generating nursing theory from practice. J Adv Nurs 1984;9:205-15.
82. Woolley N. Nursing diagnosis: Exploring the factors which may influence the reasoning process. J Adv Nurs 1990;15:110-7.
83. Carlson S. A practical approach to the nursing process. Am J Nurs 1972;72:1589-91.
84. Castledine G. Updating the nursing process (117kb). Br J Nurs 2011;20:131.
85. Moss A. Determinants of patient care: Nursing process or nursing attitudes? J Adv Nurs 1988;13:615-20.
86. Lambert P. The nursing process: The effect on patients' satisfaction with nursing care. J Adv Nurs 1987;12:562-78.
87. Magnan MA, Maklebust J. The nursing process and pressure ulcer prevention: Making the connection. Adv Skin Wound Care 2009;22:83-92.
88. Goodwin JO, Edwards BS. Developing a computer program to assist the nursing process: Phase I-from systems analysis to an expandable program. Nurs Res 1975;24:299-305.
89. Brennan M. Nursing process in telephone advice. Nurs Manage 1992;23:62-4.
90. Dolan JT. Critical care nursing clinical management through

the nursing process. Dimens Crit Care Nurs 1991;10:250.

91. Shannon M, Dextrom N, Fuhrhop M, Kellogg M. A proactive approach to computerizing nursing process: A management perspective. Health Care Superv 1989;7:71-82.

92. Macri L. Playing the Nursing Process Game. Nurs Manage 1986;17:12.

93. Webb C. Classification and framing: A sociological analysis of task-centered nursing and the nursing process. J Advance Nurs 1981;6:369-76.

94. McHugh MK. Has nursing outgrown the nursing process? Nursing 1987;17:50-1.

95. Rauen KK. Documentation of the nursing process in an outpatient clinic. J Nurs Qual Assur 1990;4:55-62.

96. Persons CB. Critical Care Procedures and Protocols, A Nursing Process Approach. Dimens Crit Care Nurs 1987;6:157.

97. Yu OS, Park IS, Joo YH, Woo KS, Shin HJ, Ahn TS, *et al.* Classification of nursing statements based on the ICNP, the HHCC, and the nursing process for use in electronic nursing records. Stud Health Technol Inform 2006;122:718-21.

98. Bernhart-Just A, Lassen B, Schwendimann R. Representing the nursing process with nursing terminologies in electronic medical record systems: A Swiss approach. Comput Inform Nurs 2010;28:345-52.

99. Greenfields VK. Techniques in Clinical Nursing: A Nursing Process Approach, Checklist Workbook, and Instructor's Manual. American Journal of Nursing 1987;87:1515.

100. Tóthová V, Sedláková G. Nursing education in the Czech Republic. Nurs Educ Today 2008;28:33-8.

101. McGreevy ME, Coates MR. Primary nursing implementation using the project nurse and the nursing process framework. J Nurs Adm 1980;10:9-15.

102. Pompeo A, Rossi LA, Galvão CM. Integrative literature review: The initial step in the validation process of nursing diagnoses. Acta Paul Enferm 2009;22:434-8.

103. Rayfield J. Using computers to speed up the nursing process. Nursing 2002;32:70.

104. Hao AT, Wu LP, Kumar A, Jian WS, Huang LF, Kao CC, *et al.* Nursing process decision support system for urology ward. Int J Med Inform 2013;82:604-12.

105. Lillesand KM, Korff S. Nursing process evaluation: A quality assurance tool. Nurs Adm Q 1983;7:9-11.

106. Vogel NA. Development and use of a nursing process Audit Instrument. Nurs Manage 1988;19:71-5.

107. Oreo T. Student Corner: The nursing process: A step forward? Contemporary Nurs 1994;3:26-30.

108. Fox-Ungar E, Newell G, Guilbault K. Documentation: Communicating Professionalism: This system provides for integration of the Nursing Process and resulting documentation which communicates professionalism. Nurs Manage 1989;20:65-71.

109. Cunning B, Pflederer D. A little practical creativity goes a long way in encouraging nurses to use the nursing process in everyday practice. Nurs Manage 1986;17:49-55.

110. Castledine G. The nursing process and standards of care. J Adv Nurs 1981;6:503-4.

111. Mangare LN. Factors influencing use of the nursing process in Naivasha District Hospital: Kenya: University of Nairobi; 2012.

112. Goldmann RC. Nursing process components as a framework for monitoring and evaluation activities. J Nurs Qual Assur 1990;4:17-25.

113. Rowden R. Doctors can work with the nursing process: A reply to Professor Mitchell. BMJ 1984;288:219.

114. Vaillancourt VM. Improving the use of the nursing process: the impact of charting methodology developed from King's conceptual framework on the use of the nursing process 1994. Available from: http://www.dr.library.brocku.ca/handle/10464/1911. [Last accessed on 1994].

115. McEvoy P. Using process mapping to improve nursing practice and patient care. Prof Nurse (London, England) 2004;19:508-11.

116. Bailey K, Swenson-Feldman E. An innovative approach to the nursing process. Nurs Adm Q 1982;6:71-6.

117. Dayem MA, el Atty Moawed A, El-Hendy W. A Study of the Nursing Process in Saudi Arabia, Part II Staff Nurses Perception of the Factors Affecting the Implementation of the Nursing Process in Saudi Arabia 1990;18:1507:1529

118. Katherason S, Nahas V. The nursing process as a model for clinical supervision. Nurs Educ 1998;23:41-50.

119. Steck A, Sangermano C, editors. Documentation: incorporating the nursing process. Seminars in perioperative nursing; 1992;1:240-8.

120. Haas SA. Analyzing the discretionary aspects of the nursing process as well as its tasks. Nurs Manage 1984;15:42.

121. Knight JH. Applying Nursing Process in the Community. Nurs Outlook 1974;22:708-11.

122. Farkas M. Utilizing the nursing process in the development of a medication group on an inpatient psychiatric unit. Perspect Psychiatr Care 1990;26:12-7.

123. Sperandio DJ, Evora YD. The use of mobile computational technology in the nursing process: A new challenge for Brazilian nurses. Stud Health Technol Inform 2009;146:721-2.

124. Bandell KJ. Nursing process: More controversy? Nursing 1987;17:5.

125. Henrikson ML, Wild LR. A Nursing Process Approach to Epidural Analgesia. J Obstet Gynecol Neonatal Nurs 1988;17:316-20.

126. Hollers K. Using the Nursing Process to Accurately Plan the Medicare 60-Day Episode of Care: You Really Do Know How to Do This!. Home Healthc Nurse 2004;22:28-33.