

Research output utilization in clinical practice and perceived barriers among nurses working in public hospitals and teaching institutions in south Ethiopia



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south Ethiopia

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Abstract

INTRODUCTION

The use of research evidence in clinical practice remains a challenge. Evidence indicates that there are gaps in utilization of research output in clinical practice. Having the knowledge of barriers may enhance research utilization in clinical practice. Much is investigated about barriers to the use of research in clinical practice. Nevertheless, there is limited evidence about what inhibits nurses working in Ethiopia from using research evidence in to practice. This study aims to assess research utilization and barriers to research utilization in clinical practice among south Ethiopian nurses.

METHODS

A sample of 296 nurses was randomly selected from a total of 11 institutions (5 hospitals and 6 academic institutions). A self administered questionnaire was used to collect the data. Nurses reported on a 29 item BARRIERS scale. One question asking the frequency of utilization of research findings in clinical practice was added into the questionnaire. Statistical Package for Social Sciences (SPSS) version 16 was used to enter and analyze the data.

RESULTS

Of the 296 nurses completed the report, only 4.7% (14) reported that they use research evidence in clinical practice all the time. The barrier items most frequently rated as 'greater' or 'moderate' were "relevant literature was not compiled in one place" and "research articles are not published fast enough". The second most perceived barrier was "research articles are not readily available" followed by "Physicians will not cooperate with implementation", and "Implication for practice is not made clear". Ethiopian nurses, however, did not appear to see any problem with regard to time.

CONCLUSION

Barrier to research utilization are categorized in to individual, organizational, and environmental related factors. The result of this study shows the need for urgent action to assist Ethiopian nurses to utilize research evidence in their daily clinical practice and highlights how to assist them.

Key words: BARRIERS scale, Research Utilization, Ethiopian nurses, barriers, facilitators

Acronyms

RU	Research Utilization
WHO	World Health Organization
SNNPR	South Nations Nationalities and Peoples Region
AHWO	Africa Health Workforce Observatory
EBP	Evidence-Based Practice
MOH	Ministry Of Health
OR	Odds Ratio
CI	Confidence Interval
df	degree of freedom
RN	Registered nurse

1. INTRODUCTION

1.1 Background

The importance of use of research evidence in clinical decision making process has been recognized in the 1980s (Polit & Baker, 2008). Use of research evidence in daily clinical decision making process contribute to improve the quality of care provided to each individual clients and reduces the health care cost (McMichael, Waters & Volmink, 2005). However, the continued use of healthcare interventions without research evidence increases healthcare cost without a positive impact on patient care outcomes (Leasure, Stirlen & Thompson, 2008). Particularly, where there is a limited resource, an evidence based approach is very important (Guindon et al., 2010). It helps to provide cost effective care to patients. The use of research evidence in daily clinical practice, however, should be integrated with one's own clinical experience and patient's values and concerns, in order to attain an evidence based practice approaches in health care. Unfortunately, applying research findings in practice is a challenging process (El-Badawy & Kassam, 2008). Evidence shows that patients who receive care based on research evidence have better outcomes than who receive care without use of research evidence. Despite this knowledge, only few health professionals utilize research evidence in their daily clinical practice (Melnik & Fineout-Overholt, 2005).

Nurses are increasingly expected to conduct research and to use evidence from research in their daily clinical practice (Polit & Baker, 2008). Research helps us to understand a certain health phenomena, the patients' response to the phenomena, and the outcome of the intervention on resolving the patients' health problem (Polit & Baker, 2008). As a result, research evidence has become highly valued as the basis of clinical decision. Nevertheless, several studies have shown that there is a gap between research evidence and the actual practice both in developing and developed countries (Bero et al., 1998 ; Guindon et al., 2010 ; Pearson & Jordan, 2010). One assumption for this persistent gap between research evidence and practice is that health care providers encounter different types of barriers that prevent them in utilizing research evidence in their clinical practice (Baker et al., 2010 ; Shaw et al., 2005).

The strategy to enhance research utilization and change current practice is to identify barriers and then implement tailored intervention to reduce these barriers (Baker et al., 2010 ; Shaw et al., 2005). A survey on health care providers in 10 low- and middle-income countries about their use of research-based evidence demonstrated that locally published research, locally adapted research-based evidence from other settings and access to the internet was viewed as a significant factor to utilize research-based evidence in practice (Guindon et al., 2010).

In nursing, the BARRIERS scale (Funk et al., 1991) has been used to identify nurses' perceptions of barriers to research utilization. Reported barriers have been categorized as characteristics of the nurses, organizational and environmental barriers, with organizational characteristics generally accounting for more variances (Carrion, Woods & Norman, 2004 ; El-Badawy & Kassam, 2008 ; Kajermo et al., 2000 ; Kajermo et al., 2008 ; McCleary & Brown, 2003). More research on utilization of research evidence and its barriers among nurses has been conducted in high-income than in low and middle-income countries. In Ethiopia little is known about nurses' perception of research utilization in clinical practice and its barriers.

The Ethiopian health system has three levels of nurse-professionals (Diploma nurses, RNs), professional nurses (Bachelor degree nurses, BSNs), and Master degree nurses (MSN). The master nurses take two years research oriented degree training after serving a minimum of two years following a 4 or 3 year bachelor degree depending on frequently changed policy on bachelor training. A bachelor degree is a University degree after achieving high score on school leaving national examination. The year of training varied between 4 and 3 years for direct high school graduates and 3 years for those who had diploma nurse training. Diploma is a 3 years nursing training in midlevel college after completing 10th grade in current curriculum or a 2 years nursing training following 12th grade in previous curriculum (before 1996). All MSNs, BSNs and RNs are trained using a hospital apprenticeship model. They take research methodology courses during pre-service training but only the professional nurses (MSNs and BSNs) are expected to conduct research as a part of their study.

Many international organizations try to emphasis on the dissemination of evidences of research findings in Ethiopia. For example, World health organization (WHO) and The Jonna Briggs Institute ConNECT Ethiopia provide access to evidence-based information to assist health professionals to use evidence from research findings at the point of care (Jonna Briggs

Institute, 1996 ; World Health Organization, 2002). However, dissemination of evidences alone does not guarantee practice change. Many of the commonly used approaches for keeping health professionals' knowledge up-to-date appear to have small or inconsistent effects. Unfortunately, we do not know about what proportion of Ethiopian nurses, who work in hospitals and teaching institutions, are using research findings in their clinical practice and what barriers they face to utilize research-evidence. Therefore, the aim of this study is to assess research utilization in clinical practice and its barriers among nurses working in public hospitals and teaching institutions in south Ethiopia.

1.2 Theoretical Framework

Funk et al. (1991) used Roger's 'Diffusion of Innovations' model for the development of the structure of the BARRIERS scale and for organization of their study. Rogers (1995) defined the concept of diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. According to Rogers (1995) the four elements of diffusion are an innovation - the perceived new idea, object, and/or practice that is to be adopted by an individual and /or unit; the communication channels- the means by which the new information is transferred to others; the time- the timeliness of adoption, whether it is early or late; and the social system-the individuals and/or organizations that work to solve a common problem.

There are five stages within the innovation-decision process:

- 1) Knowledge- exposure to the innovation and understanding of its function;
- 2) Persuasion- a favorable or unfavorable attitude is formed toward the innovation;
- 3) Decision- engagement in the activity that leads to a choice to either adopt or reject the innovation;
- 4) Implementation-the idea is put to use; and
- 5) Confirmation-reinforcement of innovation-decision is made (Rogers 1995).

This model fits the concepts of research utilization. Funk and colleagues (1991) correlated elements of the diffusion model into the structure of the BARRIERS scale, resulting in four major factors: the adopter (nurse), the organization (setting), the innovation (qualities of the research) and communication (the presentation and/or accessibility of the research).

1.3 Summary of similar studies

Many researchers have studied nurses' perception of barriers to and facilitators of research utilization in order to identify strategies to facilitate utilization of research in different countries (Carrion, Woods & Norman, 2004 ; Chang, Russell & Jones, 2010 ; Thompson, Lopez & Chau, 2008 ; Cummings et al., 2007). Unfortunately, the research practice gap remains a persistent issue among nurses working in different settings (Chang, Russell & Jones, 2010 ; Chau, Lopez & Thompson, 2006 ; Dunn et al., 1997 ; El-Badawy & Kassam, 2008). Majority of studies that have explored barriers to research utilization were conducted in developed countries and therefore have yielded nearly similar results (Brown et al., 2009 ; Chang, Russell & Jones, 2010 ; Chau, Lopez & Thompson, 2006 ; Strickland & O'Leary-Kelley, 2009 ; Thompson, Chau & Lopez, 2008) .

The review of literatures suggests that barriers to research utilization can be categorized into four groups: health-care professional-related, organization-related, research-related, and presentation-related factors (Chang, Russell & Jones, 2010 ; Funk, Tornquist & Champagne, 1995 ; Yava et al., 2009). For example, findings from previous studies indicate that the nurse-related competencies like knowledge, awareness and attitudes were seen as barriers to research utilization (Brown et al., 2009 ; Strickland & O'Leary-Kelley, 2009). Gerrish and colleagues (2008) has shown that limited knowledge/skills of nurses, particularly in understanding and judging the quality of research were determinants of research output utilization. These results were similar with those of Ofi and colleagues (2008) who conclude inability to understand research reports and statistics as barriers to implementing evidence. Among nurses in non-English speaking countries, the lack of English language skill was another important barrier to use research evidence in practice due to the fact that most research papers were published in English language (Hommelstad & Ruland, 2004 ; Nilsson Kajermo et al., 1998 ; Oranta, Routasalo & Hupli, 2002).

The most frequently rated barriers to research utilization by nurses in many countries were barriers related to settings (organization) and presentation (research communication). Especially lack of time, lack of awareness of available research literature, insufficient authority to change practice, inadequate facilities, lack of physicians cooperation, and lack of support for implementation of research findings (Brown et al., 2009 ; Mehrdad, Salsali & Kazemnejad, 2008 ; Strickland & O'Leary-Kelley, 2009 ; Thompson, Chau & Lopez, 2008).

For example, Mehrdad and colleagues (2007) found that the major barriers to research utilization were that nurses do not have time to read research, facilities are inadequate, nurses do not feel they have enough authority to change practice, and nurses are less involved in research.

Strickland and O'Leary-Kelley (2009) concluded that the greatest barriers to research utilization were organizational and nurse characteristics. These findings were consistent with reported perceptions of nurses from different countries. Lack of high quality research evidence (limited generalizability of the evidence), and poor or complicated presentation of research findings are another identified barriers to use research evidence in practice for nurses (Brown et al., 2009 ; Strickland & O'Leary-Kelley, 2009 ; Yava et al., 2009). In one of the largest study from Nigeria, inability to understand research reports and statistics were identified as important barriers. Ofi and colleagues concluded from their finding that the knowledge and experience base for research among the nurses is deficient. Although many of respondents (68.2%) access research information, the utilization of research in their daily clinical decision making process is very low (Ofi et al., 2008). These findings were similar with those of Andersson and colleagues who further explained two important barriers to research utilization as the quality of research results was overwhelming, and the nurses found that they were unable to evaluate the quality of research (Andersson et al., 2007).

It is possible to infer from the review of the literature that the barriers to research utilization among nurses can be due to factors related to the organization which includes administration will not allow implementation, Physicians will not cooperate with implementation, insufficient time on the job to implement new ideas or to read research, other staff are not supportive of implementation, inadequate facilities, the nurse does not feel she/he has enough authority to change patient care procedures, the nurse feels results are not generalizable to own setting, factors related to the nurses such as lack of knowledge of research, attitude and skills, factors related to the research itself i.e. the way the research presented and the quality of the evidence. Factors related to the organization are among the highly ranked barriers to research utilization in majority of the studies followed by nurse related factors and research related factors. However, we have limited evidence what barriers nurses perceive in one of the weakest health systems in developing countries such as Ethiopia.

2. AIMS AND OBJECTIVES

2.1 General objective

The aim of this study is to assess research utilization in clinical practice and perceived barriers among Ethiopian nurses working in public hospitals and teaching institutions in south Ethiopia.

2.2 Specific objectives

1. Describe nurse educators' actual research utilization and their perceived barriers to research utilization.
2. Describe research utilization in clinical practice and perceived barriers among nurses working in public hospitals.
3. To examine whether there is a difference in research utilization and perceived barriers to utilization between Diploma and Degree nurses.

3. METHODS

3.1 Study design

Cross-sectional survey design was used. The reason for choosing cross-sectional design for this study is that surveys can be used to describe the frequency of events in person, places and time. Therefore this will be useful in order to describe the proportion of nurses who are using research findings in their clinical practice. Moreover, cross-sectional survey study is appropriate for describing the status of the phenomena at one point in time which gives a picture of what is happening in a population; for example, experience of a group of population Polit & Beck (2008). Therefore a cross-sectional study will help us to describe the experience of a group of nurses on barriers to research utilization. As discussed above, the design was preferred because a cross-sectional study is a relevant design to attain the intended objectives of the study. Moreover, the design was preferred because of time constraint to complete the study.

3.2 Sampling

3.2.1 Sample

The target population of interest for this study was staff nurses and nurse educators working in hospital and teaching institution respectively. The master degree nurses (MSNs), the bachelor degree nurses (BSNs) and Diploma nurses (RNs) who had ever work experience of at least six months during data collection were included in this study. However, nurses with the certificate level of qualification (junior nurses who had only 1 or 2 years nursing education in midlevel colleges) were not part of this study because of the perception that they may have limited exposure to research and scientific evidences. Nurses who had ever work experience of less than six months were not included in the study because of the assumption that these nurses may have difficulty in describing the perceived barriers to research utilization in their own organization because of short experience. Moreover, six month is the

time where civil servants are on trial observation to get permanent employment status after being employed in a public organization in Ethiopia.

3.2.2 Sample size and sampling technique

Previous studies in several areas used participant numbers ranging from 63 nurses in Northern Ireland (Brenner, 2005) to 1487 nurses in Hong Kong (Thompson, Lopez & Chau, 2008). The numbers of nurses in the five purposely selected hospitals were: 441 diploma nurses (midwife-nurses were included) and 121 degree nurses (including nurses upgraded to health officer and midwifery). The number of nurses in the six purposely selected nurse teaching institutions (colleges and universities) was: 59 diploma, 130 bachelor, and 70 masters. Therefore, the total numbers of nurses in the selected institutions were 824 nurses (500 diplomas, 251 bachelors and 70 masters). Taking the population of nurses in the study institutions as 824 and expecting 50 percent of nurses may respond one of suggested barriers to research utilization, and 95 percent confidence limit, the sample size is calculated as 263 nurses (www.openepi.com/samplesize/proportions).

However, to take into account any non-response I made the final sample 315 nurses (Polit & Baker, 2008). For selecting the 315 nurses to be studied among the 824 nurses, a stratified sampling technique was used to include the master, bachelor and diploma nurses proportional to their size. The list of the names of nurses who had at least six months work experience at each organization was used as a sampling-frame for random selection of the study population. Once a sampling frame had been developed, the names of the nurses are numbered consecutively. A table of random numbers was then used to draw a sample of the desired size.

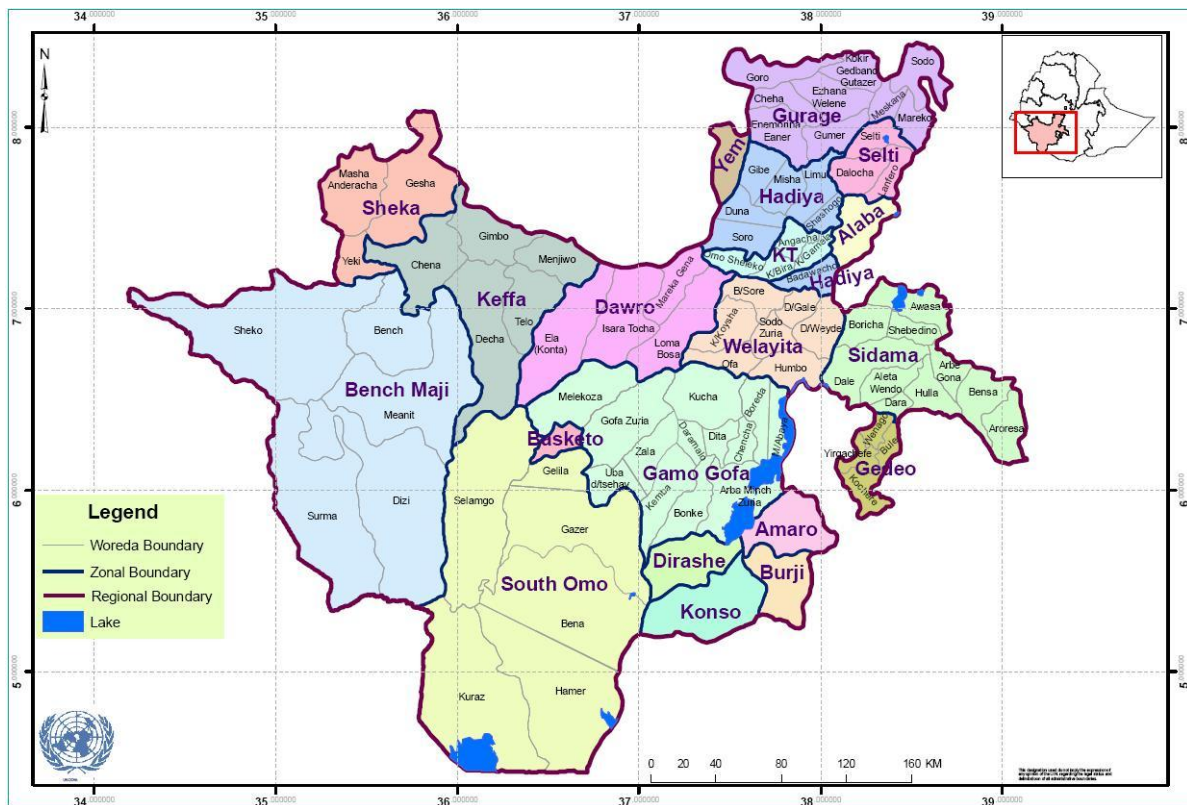
3.2.3 Setting

This study was conducted in 11 institutions that existed in Southern Nations Nationalities and Peoples Regional State (SNNPRS) in Ethiopia. Four of the institutions (Hawassa University school of nursing, Hawassa University referral hospital, Wolaita Sodo University school of nursing, and Arba Minch University school of nursing) were administered by the federal

government though physically exist in SNNPRS. The regional state is located southern and south-western part of Ethiopia (figure 2). The total area of the region is estimated to be 118,000 km². It is divided into 13 zones (sub-regions), 8 special weredas (districts given special attention and directly responsible to Regional State because of their ethnic background). The 13 zones were further divided into 134 weredas (districts). The woredas were classified into 3678 smallest state administration villages known as kebeles. There were also 22 town administrations directly responsible to the Zonal administration except Awassa city which is responsible to the Regional state. Town administrations are further divided into 238 town kebeles (South Nations Nationalities and Peoples Regional State Education Bureau, 2009 ; South Nations Nationalities and Peoples Regional State Bureau of Culture and Turism, 2010).

The Regional State is bordered with Kenya in south, the Sudan in southwest, Gambella region in northwest and surrounded by Oromiya region in northwest, north and east directions. According to Central Statistical Agency of Ethiopia (CSA), the region has an estimated total population of 15,042,531, accounting about 20% of the total population of the country. The regional state has an estimated density of 132.65 people per square kilometer (Central Statistical Agency of Ethiopia, 2007 ; Ministry Of Health, 2009). The population of the region is estimated to grow at an average rate of 2.9% per annum (South Nations Nationalities and Peoples Regional State Bureau of Culture and Turism, 2010). Nearly 90 percent of the population is estimated to be rural inhabitants. (South Nations Nationalities and Peoples Regional State Education Bureau, 2009).

Figure 2: Map of South Nations Nationalities and People Regional State (SNNPR)



Source: <http://www.ethiodemographyandhealth.org/SNNPR.html>

According to the report from the MOH (2009), the south Ethiopia regional state has 2 private and 18 public Hospitals, 181 Health Centers, 256 Health stations and 3,729 Health Posts (Ministry Of Health, 2009). Hospitals mainly provide curative services (medical, surgical, pediatrics, gynecologic and obstetric services, eye and psychiatric care and so on). Medical doctors of different specialties and general practitioners, nurses and midwives, pharmacists, laboratory technologists and others work in hospitals (such as administrative workers). Health centers are smaller than hospitals and are at the frontline of health care in the region. The work of health centers is primary curative and preventive service. A health center serves 25,000 populations and coordinates the works of 5 satellite health posts in its catchment. Health centers are staffed by health officers, nurses (mostly diploma), diploma midwives, druggists and laboratory technicians (diploma). A health post is a lowest level health institution with major task of preventive and health promotion duties. Health posts are staffed

by only health extension workers (high school graduated women who had 1 year general health training and permanent employee of ministry of health).

There are about 56 different ethnic groups with their own distinct geographical location who have different languages and cultures in the region (South Nations Nationalities and Peoples Regional State Bureau of Culture and Tourism, 2010). According to AHWO (2009), the numbers of public health training institutions are seven and the numbers of nurses currently in service both in private and public health institutions are 21,488 in the region (Africa Health Workforce Observatory, 2010). Currently there is decentralization of the health care system in which the regional health bureaus are established to function more on policy matters and technical support, while the Woreda (district) health offices have been made to function to manage and coordinate the health care services at the Woreda levels (Ministry Of Health, 2009) .

This study was conducted in five public hospitals (Yirgalem, Hawassa, Soddo, Hossana and Arba Minch), three degree nurse educating departments of Universities (Hawassa, Soddo and Arba Minch), and three diploma nurse educating Colleges (Hawassa, Hossana and Arba Minch). The hospitals had different departments including medical, surgical, obstetrics & gynecology, pediatrics & outpatient departments. The staff mix of hospitals include internists, surgeons, pediatricians, gynecologists, general practitioners, other administrative staffs and nurses (general, midwife, clinical, psychiatric, anesthetic), pharmacists, laboratory and radiographic technologists and technicians.

The eleven institutions (five hospitals and six nursing schools) were selected purposely because these institutions contain relatively large number of nurses and also better qualified and experienced nurses who were expected to use evidence from research works. In addition, it is assumed that nurses working in these institutions should have been exposed to research in clinical practice as the hospitals and teaching institutions are the major service providing and teaching institutions in the south region of Ethiopia. All of the public hospitals had the diploma and degree nurses. There are few master degree nurses who were working only in teaching Colleges and Universities.

3.3 Procedures for data collection

The English version of the BARRIERS scale developed by Funk et.al, 1991, with permission from the author, was used to investigate barriers to research utilization. The validity of the instrument has been proved in previous studies (Funk, Tornquist & Champagne, 1995 ; Brenner, 2005 ; Thompson, Lopez & Chau, 2008). The reliability of the scale has shown a good internal consistency in the original Funk study with Cronbach's alpha value of 0.89. In this study, Cronbach's alpha value for the scale was 0.88 and for the sub-scales (factors): nurse (0.71), setting (0.73), research (0.76), and presentation (0.74). For a sub-scale with fewer number of items (<10), alpha value up to 0.5 is generally considered reliable.

Self-administered survey was used to collect data as the respondents are professional literates. Nurses working in south Ethiopia are native speakers of different local languages such as Sidama, wolayita, Hadiya, Gammo and others. However, English language is taught as a subject starting from grade three. Also it is the medium of instruction for all courses, except local language courses, starting from grade seven. English language is the official language of communication (spoken and written) for health professionals, including nurses, on their job in Ethiopia. To assess the current use of research in clinical practice, one question asking the frequency of utilization of research findings in clinical practice was added into the questionnaire.

The BARRIERS scale is composed of 29 items. The participants were asked to rate each item to the extent to which they agree with the presence of barriers to their use of research in practice: 1 = 'to no extent', 2 = 'to a little extent', 3 'to a moderate extent', 4 = 'to a large extent' and 5 = 'no opinion'. The higher the score, the greater the perceived barrier will be. In addition, the participants were asked to rate three barriers from the 29 items according to priority: 1 = greatest barrier, 2 = second greatest barrier and 3 = third greatest barrier.

The items were randomly arranged throughout the questionnaire without identification of the titles (factors) they belonged. In addition, in open-ended question, the respondents were asked to make suggestions on how to facilitate future research utilization and to mention other barriers to research utilization in their setting that were not included in the 29 items.

Prior to distribution, the questionnaire was pre-tested for understandability of the terminologies (technical words) for the Ethiopian nurses, and to attain estimates of the amount of time required to complete the questionnaire. The data was collected by visiting the institutions and handing the questionnaire to the consented respondents. The pre-tested questionnaires were distributed to nurses by the assigned data collectors while the nurses were on duty. The response was collected the next day of handing the questionnaire so as to shorten the length time to reduce the probability of non-responses.

3.4 Data analysis

The BARRIERS Scale is an ordinal-scale measurement that measures participants' opinions. The data from the BARRIERS scale was labeled in accordance with Rogers' theory:

- 1) the characteristics of the adopter – the nurse's research values, skills and awareness (eight items);
- 2) the characteristics of the organization – setting barriers and limitations (eight items);
- 3) the characteristics of the innovation – qualities of the research (six items);
- 4) the characteristics of the communication – presentation and accessibility of the research (six items).

Data analysis was performed using SPSS-16 (Statistical Package for the Social Sciences) software. Frequency and descriptive statistics was employed to describe the demographic characteristics of respondents. The Mann-Whitney U-test was used to test differences between diploma and degree nurses on the barrier items. The Mann-Whitney test is a non-parametric test that is used to test the difference between two independent groups (diploma & degree nurses) on a continuous measure (BARRIERS scale items). First the Mann-Whitney U test converts the scores on the continuous variables to ranks across the two groups and then evaluate whether the ranks for the groups differ significantly. Responses to the open-ended questions were analyzed using content analysis.

3.5 Ethical issues

A written permission to conduct the study was obtained from the Health Research Review Committee under the Regional state Health Bureau in South Ethiopia. Oral consent was obtained from all participated nurses after explaining the importance of participation and their freedom not to participate. In addition, written information about the right to participate or not was provided on the first page of the questionnaires. Thus, Participation in the study was voluntary. There was no payment for participation. To ensure confidentiality, names and personal identifiers were not used in the questionnaires. Consent was implied by the return of completed questionnaires. Written permission was obtained from Professor Funk to use the BARRIERS scale questionnaire.

4. RESULT

4.1 Study respondents

Out of the 315 sampled nurses 296 respondents completed and returned the questionnaire (94% response rate). 56% (165) of the respondents were male and 44% (131) were female. 55% (163) of the nurse were from 5 Hospitals and 45% (133) were from 6 teaching institutions. The mean age of participants was 29 years (SD = 6.9); range 20 to 56 years. Over two-thirds of the respondents (68%) were age below 30 years. In qualification, 51% (151) had diploma, 40 % (117) first degree and 9% (28) were master nurses. The mean year of work experience was 6.5 years (SD=5.9), range 1 to 33 years (table 1). Majority of participant nurses, 75.5% (114), working in hospitals had diploma qualification and 66% (96) nurses in teaching institutions were first and second degree graduates.

Table 1 : Backgrounds of the respondents

Backgrounds (N=296)	% (n)
Sex	
Male	56.1 (166)
Female	43.9 (130)
Age	
20-30	68.2 (202)
31-40	19.3 (57)
41 plus	8.4 (25)
Missing	4.1 (12)
Education	
Diploma	51.0 (151)
Bachelor	40.0 (117)
Master	9.0 (28)
Institution	
Hospital	55.0 (163)
Academic	45.0 (133)
Work experience	
1-5yrs	58.4 (173)
6-10yrs	27.7 (82)
11 yrs plus	8.4 (25)
Missing	4.1 (12)
Pre-graduate research course	
Yes	71.3 (211)
No	28.7 (85)
Postgraduate research training	
Yes	23.0 (34)
No	77.0 (114)
Job	
Hospital nursing	55.5 (164)
Academic teaching	44.3 (131)
Ever conducted research	
Yes	58.0 (171)
No	42.0 (125)

4.2 Perceived barriers to research utilization in clinical nursing

The mean score rank of the 29 items of the BARRIERS scale is presented on Table 2. Also the proportion of respondents rated “greater barrier” or “moderate barrier” was calculated and presented besides the mean score for each barrier item. The barrier items most frequently rated as 'greater' or 'moderate' were: “relevant literature was not compiled in one place” and “research articles are not published fast enough” by 66.6% of respondents. The second most perceived barrier was “research articles are not readily available” by 65.5% respondents and the third was “Physicians will not cooperate with implementation” by 62.8%, and the fourth was “Implication for practice is not made clear” by 60.1% of the participant nurses.

Among the barrier items the least scored were: “the nurse does not have time to read research” by 32.4%, “the research is not relevant to the nurses’ practice” by 34.8% and “the nurse is unwilling to try new ideas” by 37.5%.

When the result is presented by the sub-scales (factors), the factor that has got highest mean score as a main barrier factor was “setting”. The second most perceived factor was “accessibility” to research findings, followed by “nurse” and “research” (Table 3).

Few respondents reported 'no opinion' option on each item. The item “the literature reports conflicting results” was the most rated as 'no opinion' by 12.8 percent of the respondents. The second mostly rated as 'no opinion' was "the research has not been replicated" by 11.5 % respondents followed by “the research has methodological inadequacies”, and "conclusion drawn from the research are not justified" by 10.8%.

Table 2 : Proportion of nurses rated 'greater' or 'moderate' on 29 barrier items of the scale, south Ethiopia, 2011

rank order	Sub-scale	Factor	Moderate/ Great. bar. %(n)	Mean (SD)	no opinion %(n)
1	The relevant literature is not compiled in one place	4	66.6 (197)	3.0(1.0)	6.4(19)
2	Research reports/articles are not published fast enough	3	66.6 (197)	2.8 (1.4)	10.8(32)
3	Research reports/articles are not readily available	4	65.5 (194)	2.9 (1.2)	5.1(15)
4	The facilities are inadequate for implementation	2	65.2 (193)	2.8 (1.2)	4.7(14)
5	Physicians will not cooperate with implementation	2	62.8 (186)	2.7(1.4)	11.5(34)
6	Implication for practice are not made clear	4	60.1 (178)	2.6 (1.1)	8.1(24)
7	The nurse does not feel she/he has enough authority to change patient care procedures	2	60.1 (178)	2.6 (1.1)	3.4(10)
8	The nurse feels results are not generalizable to own setting	2	58.4 (173)	2.6(1.2)	6.1(18)
9	Administration will not allow implementation	2	58.4 (173)	2.6(1.2)	10.8(16)
10	The nurse is isolated from knowledgeable colleagues with whom to discuss the research	1	56.8 (168)	2.7(1.3)	7.4(22)
11	The nurse is unaware of research	1	54.1 (160)	2.5 (1.2)	4.7(14)
12	There is no documented need to change practice	1	54.1 (160)	2.5 (1.2)	1.4(2)
13	Other staff are not supportive of implementation	2	53.7 (159)	2.5 (1.2)	4.7(7)
14	The research is not presented clearly and readably	4	52.4 (155)	2.4(1.2)	8.8(13)
15	The research has not been replicated	3	52.4 (155)	2.7(0.9)	11.5(34)
16	The feels benefits of changing practice will be minimal	1	51.7 (153)	2.5(1.2)	10.8(16)
17	The nurse does not feel the value of the research for practice	1	51.4 (152)	2.5(1.2)	2.0(3)
18	The nurse does not feel capable of evaluating the quality of the research	1	50.7 (150)	2.4(1.2)	3.4(5)
19	The nurse sees little benefits for self	1	49.7 (147)	2.6(1.1)	4.7(14)
20	There is insufficient time on the job to implement new ideas	2	47.0 (139)	2.4(1.2)	4.1(6)
21	The amount of research reports is overwhelming	*	45.9 (136)	2.2(1.2)	10.8(16)
22	Statistical analysis are not understandable	4	45.6 (135)	2.3(1.2)	4.1(6)
23	The conclusion drawn from the research are not justified	3	44.9 (133)	2.5(1.0)	10.8(32)
24	The research has methodological inadequacies	3	42.6 (126)	2.4(1.0)	10.8(32)
25	The nurse is uncertain whether to believe the results of the research	3	42.2 (125)	2.4(1.0)	9.5(28)
26	The literature reports conflicting result	3	38.2 (113)	2.3(1.0)	12.8(38)
27	The nurse is unwilling to change/try new ideas	1	37.5 (111)	2.2(1.1)	6.4(19)
28	The research is not relevant to the nurse 's practice	4	34.8 (103)	2.2(1.2)	10.1(30)
29	The nurse does not have time to read research	2	32.4 (96)	2.1(1.0)	7.4(22)

*Has no factor

Table 3: Scores on sub-scales (factors) of the BARRIERS scale, south Ethiopia, 2011

Factor	Mean	SD	(N=296)	Cronbach's Alpha	Number of items
factor 1: Adopter (nurse)	2.47	.717	261	.71	8
factor 2: Organization(Setting)	2.53	.63	261	.73	8
factor 3: Innovation (Research)	2.31	.65	261	.76	6
factor 4: Communication (Accessibility)	2.52	.61	261	.74	6

Note: Cronbach's alpha value for the scale was 0.88

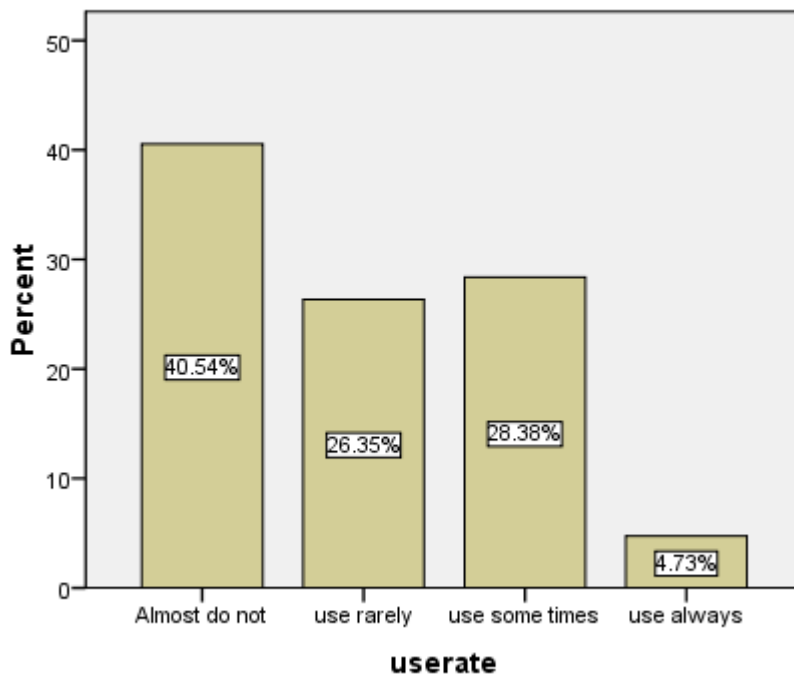
In order to determine the internal consistency of the instrument, Cronbach's alpha coefficient was calculated and presented on table 3. Cronbach's alpha value is one of the most commonly used indicators of internal consistency of an instrument. It refers to the degree to which the items that make up the scale measure the same attribute. Cronbach's alpha value should be .7 and above (Polit & Beck, 2008, p.456). However, for a sub-scale (a factor) with fewer number of items (for example scales with fewer than ten items), lower alpha value up to 0.5 is generally considered reliable. In this study, Cronbach's alpha value for the scale was 0.88. The Cronbach's alpha value in the original Funk study was 0.89. The higher the mean score is the main perceived barrier factor. The standard deviation tells us on average, how much scores deviate from the mean score obtained for each of the four factors.

4.3 Use of research in clinical practice among nurses

Of the 296 nurses completed the report, only 4.7% reported that they use research evidence all the time in clinical practice (Figure 1). Majority of the nurses that reported the experience of use of research evidence in clinical practice were working in academic institutions (3.7%), Pearson Chi-Square =17.835, df 3, P= 0.000) and majority had master and bachelor degree (3.04%) Pearson Chi-Square =10.403, df 3, P= 0.015) (Table 4).

Logistic regression analysis was done to assess how the background of the respondents (age, education, and work experience) affects their use of research in clinical practice. The odds of utilizing research in clinical practice for nurses in this sample was twice higher for nurses who had degree education than diploma nurses; OR= 2.28, (95.0% CI: 1.303- 4.003), p=.004, df=1. Work experience (p=0.616) and age (p=0.7) did not contribute significantly to use of research.

Figure 1: Ever use of research in clinical practice among south Ethiopian nurses working in hospitals and teaching institutions 2011GC



Note: Almost do not= never, use rarely= seldom, use always=all the time

Table 4: Reported ever use of research in clinical practice among diploma and degree nurses working at academic institutions and hospitals in south Ethiopia, 2011GC

Variable		Research use rate					Chi-Square Test		
		Never %(n)	seldom %(n)	some times %(n)	All the time %(n)	Total %(n)	Pearson Chi- Square	df	P- value
Institution	Hospital	26.0(77)	16.2(48)	11.8(35)	1.0(3)	55.1(163)	17.835	3	0.000
	Academic	14.5(43)	10.1(30)	16.6(49)	3.7(11)	44.9(133)			
Educational level	Diploma	23.7(70)	14.9(44)	10.8(32)	1.7(5)	51.0(151)	10.403	3	0.015
	Degree	16.9(50)	11.5(34)	17.6(52)	3.0(9)	49.8(145)			

4.4 Comparison of nurses' perceptions of barriers by educational background

Analysis of educational background of nurses against the sum of the variables of the whole BARRIERS scale showed statistical differences in some of the barrier items (Table 5). There was significant difference in groups median score between diploma and degree nurses on some of barriers items related to “accessibility”, “setting” and “research sub-scales”. The statistically significant score difference on barrier items was, for example, due to higher scores by diploma nurses on most of barrier items related to research compared to degree nurses that provided smaller score on most of items related to “research”.

Table5: Differences on mean rank score between diploma and degree nurses of Mann-Whitney U test on barrier items, south Ethiopia, 2011

Barrier/Item #/Factor	Mann-Whitney U	Z	Educational level				p-value
			Diploma		Degree		
			N	Median	N	Median	
The research is not relevant to the nurse's practice(4)/research quality	6208.000	-4.386	138	2.5000	128	1.0000	0.000
The nurse is uncertain whether to believe the results of the research(10)/research	7628.500	-2.202	136	3.0000	132	2.0000	0.028
The relevant literature is not compiled in one place(12)/communication	8060.000	-2.437	137	3.0000	140	4.0000	0.015
Physicians will not cooperate with implementation(18)/setting	7102.000	-3.783	134	3.0000	135	4.0000	0.000
There is no a documented need to change practice(21)/nurse	7102.000	-3.783	136	2.0000	140	3.0000	0.000
The literature reports conflicting results(23)/research quality	6373.500	-3.345	135	3.0000	123	2.0000	0.001
The nurse does not feel capable of evaluating the quality of the research(27)/nurse	7251.000	-2.256	132	3.0000	130	2.0000	0.024
There is insufficient time on the job to implement new ideas/29(setting)	8168.500	-2.583	139	3.0000	142	2.0000	0.010

Table 5 shows significance value of the test statistics and groups median difference for barrier items showed significant difference based on nurses educational level. The Mann-Whitney U test calculates the number of times that an item score from group 1(diploma nurses) precedes an item score from group 2(degree nurses) and the number of times that an item score from group 2 (degree nurses) precedes an item score from group 1(diploma nurses). The Mann-Whitney U is the value of U that is used as the test statistic that is the smaller of the two U's

(item scores), means U for diploma nurse and U for degree nurse. For example, a median value for diploma nurses and degree nurses for barrier item “the relevant literature is not compiled in one place (item 12)” were 3.0000 and 4.0000 respectively. The item scores in the two groups differed statistically significantly (The Mann-Whitney U= 8060.000, p= 0.015, N=137 (diploma), N= 140 (degree). The degree nurses had higher mean rank score on this specific barrier than diploma nurses. Similar inference can be drawn from the table how the barrier items significantly differed with educational level.

4.5 Additional opinions responded to an open ended question on barriers and facilitators to research utilization

Seventy percent of the respondents suggested on additional barriers and facilitators to research utilization to an open ended question. Many of additionally stated barriers were those already included in BARRIERS scale. Common themes emerged were: 'access to research', 'research knowledge, skill and practice', 'resource/ funding', 'organization', and 'nurses attitudes towards research utilization'.

Research access

The most frequently mentioned barriers with regard to research access were: lack of access to research articles/journals, internet service, computer, reference books, and an organized library.

Research knowledge, skills and practice

Respondents suggested that they had little knowledge about research itself. Most frequently mentioned barriers were lack of awareness of nursing research results, lack of knowledge about research itself and statistical methods, lack of skills and knowledge how to utilize research, inadequate in school and in-service training.

Resource/funding

Respondents mentioned inadequate resource as important barrier to utilize research. The respondents mentioned resource related barriers as: 'no budget for nursing research', 'no award for nurse researchers', low payment/ salary, 'lack of skilled nurse researchers who direct research activities in nursing', lack of time to read research.

Support from managers/ colleagues

No support from top manager/ administrator, irresponsible nurse leaders, negative attitude of physicians and health officers towards the nursing profession and nurses roles, weakness of nursing association in Ethiopia, no support from the government for nursing research, unwillingness of other professionals to cooperate and accept nurses new ideas, hospital and institution managers undermine nursing profession as nurses lack authority to make a change in patient care in the country.

Nurses' attitudes

Majority of nurses mentioned that there was a complex between nurses and physicians/ health officers in the country in regard to patient care. As majority of the respondents mentioned Physicians and Health officers had superiority complex, because of this nurses express as they were dependent on physicians as it is not allowed for nurses to change practice even if they are aware of best practice. They mentioned dissatisfaction or lack of interest in nursing profession, negative attitude for research as mentioned "research is for graduation (completion of study) not for implementation, lack of motivation, poor perception of the society towards nursing care.

The response to open ended questions that asked the respondents to suggest additional barriers and facilitators to research utilization after they completed the BARRIERS scale was a mirror image of each other. For example lack of access to research articles / journals was

mentioned as barrier to research utilization and access to research articles/journal was mentioned as facilitators of research utilization by respondents.

Facilitators of research utilization

The following were suggested facilitators, as a response to open ended question, to improve research evidence use in clinical practice:

- Time to read and implement, skilled man power in nursing profession, internet/ computer/ library access, reference books, room for nurses to read research
- Awarding nurse researchers, assigning budget for nursing research, increase salary for nurses
- Support from the managers/ administration/physicians/ government or politicians
- Making research articles/ reports available at each organization/ setting
- Education and short and long course training on research and research implementation
- Training for physicians and top managers to create awareness of nursing research
- Creating awareness of nurses on research findings and importance of research utilization, encourage nurses to read
- Presenting research findings precise, understandable and clear
- Team building, good leadership, have research team
- Professional development
- Changing the attitude of nurses that conducting research is not for academic fulfillment but should be implemented and problem solving.

5. DISCUSSION

The barrier to use research evidence in clinical practice was the focus of this study. The result in this study shows that most perceived barriers among Ethiopian nurses was barriers related to “presentation/ accessibility” of the research and the characteristics of the “setting”. Barriers to research utilization have been identified in previous literature. Only few Ethiopian nurses utilize research findings in clinical practice, and majority was degree nurses and working at academic institution.

This study showed nurses working in south Ethiopia were young, with short work experience and majority had diploma training. Many degree holders work in teaching institutions than service providing hospitals. More than half (58.4%) of the respondents have only 1 to 5 years of work experience. This result may be different if most of the respondents had 10 or more years of work experience. More than a half (58%) of the respondents had ever conducted a study. This result was similar with a study from Nigeria of which most of the respondents have conducted research (63.8%) (Ofi et al., 2008). As explained by the authors, currently nursing institution in Nigeria are involved in research methods and conduct. The high proportion of nurses reported experience of ever conducted research in this study may be majorly attributed to the compulsory research study during the first and second degree studies. Therefore it is less likely that this many nurses have conducted research during their job. Majority of nurses (71.3%) reported that they had attended pre-graduate research course.

The findings in this study showed that the most perceived barriers to using research evidence in clinical practice for nurses in south Ethiopia were barriers relate to “presentation/accessibility" of the research findings and "setting / organization" they work. In comparing our findings with the findings from other studies, we found few similarities and differences in major perceived barriers. The first top most ranked perceived barriers items reported by Ethiopian nurses were “the relevant literature is not compiled in one place”, “research articles are not readily available”, “Implication for practice are not made clear”. However, studies in developed countries such as UK, USA, Australia, and China mentioned the top most perceived barriers as: “the nurse does not have time to read research” and “the

nurse has insufficient time on the job to implement new ideas” (Hutchinson and Johnston, 2004; Thompson, Chau & Lopez, 2008; Yava et al., 2009; Brown et al., 2009).

Ethiopian nurses, however, did not appear to see problem with regard to time as major barrier to research use in clinical practice. Nurses responded to this study provided the least score to the item “the nurse does not have time to read or implement research evidence” as barrier to research utilization (table 2). Our finding was similar with a study from other African country which shows majority disagreed with the statement that nurses are too busy delivering care to spend time in reading research materials (62%) (Ofi et al., 2008). As I have mentioned above, this result were different from western countries where most nurses complain about lack of time as a major barriers to research utilization. This may explain that nurses in developing countries where there is less accountability and loose supervision may be very busy doing clinical works in their duties. Also reading and writing reports and other communications may consume much time for nurses in developing countries while these may not affect much nurses in developed countries where access to computers and internet is rare and writing is simple. Many researchers emphasize also the need to investigate what the concept of 'lack of time' stands for.

Similar study among Nigerian nurses showed the major reason for not using research findings as 'unavailability and inaccessibility of information about innovative findings in nursing' and 'wrong attitudes towards research'. The research accesses related barriers appear to be less a concern for nurses in the developed countries. The result in this study indicates that most of the respondents perceived majorly that there is/are no research evidence/articles/reports that are readily organized and compiled for use. We interpret this result also as reflection of lack of awareness of nursing research and policies for research utilization in the institutions. Our study suggests that designing strategies to access research evidence (such as internet, compiling recent evidences in accessible places) may serve as facilitator to research utilization in Ethiopia.

Next major perceived barriers perceived by nurses in this study were that “the facilities are inadequate for implementation”, “Physicians will not cooperate with the implementation”, and “the nurse does not feel she/he has enough authority to change patient care procedures”. These barriers were also mentioned as major barriers in studies conducted USA, Ireland,

Turkey, Norway, and Sweden (Brown et al., 2009; Parahoo K. (2000); Yava et al., 2009; Hommelstad & Ruland, 2004). Interestingly, the item “the nurse does not feel she/he has enough authority to change patient care procedures” was found to be highly ranked in almost all previous studies in other countries. This may suggest that nurses in different countries feel they lack authority to change patient care procedures despite they are working in different settings. This might also be due to wide spread traditional hierarchy in health professions where doctors are considered major change deciders.

As far as I know there are no other similar studies published from Ethiopia to compare with the findings of this study. Few similar studies were conducted among nurses working in Africa. A study conducted in Egypt showed that the items "the nurse does not feel she/he has enough authority to change patient care procedures" and "statistical methods are not understandable" as first and second most perceived barriers. “The relevant literature is not compiled in one place” was also a major barrier perceived by Egyptian nurses.

Among the barrier items the least scored by Ethiopian nurses was “the nurse is unwilling to try new ideas” by 37.5%. This may tell us nurses may have positive attitude and willing towards research and research utilization, but other factors such as environmental or organizational factor may contribute greatly as barriers. For example, the feeling that nurses lack of authority to change practice even if they have aware of current evidence may lead to dissatisfaction or disinterest in nursing profession and nursing job. Thus, nurses may feel that if they do not have authority to change current practice, they may think that someone else like physicians may be responsible for trying new ideas and evidences. Another explanation could be poor perception of the Ethiopian society towards nursing care and nurses as change agents. In current situation in Ethiopia the society mostly rely on physicians than nurses as they perceive that nurses do not have authority in changing patient care.

Our study showed that there was statistically significant score difference between diploma and degree nurses on most of the barrier items related to “research” and some of the barrier items related to “accessibility” and “setting” (table 5). The statically significant high barrier item

scores related to research such as “the literature reports conflicting result” ($p=0.001$), “the nurse is uncertain whether to believe the result of the research” ($p=0.028$), “The research is not relevant to nursing practice” ($p=.000$) by diploma nurses may be explained by the fact that diploma nurses were less aware of research and they may have difficulty in understanding research and statistical methods, as they were not expected to do research during their study under Ethiopian curriculum. However, introductory research course is given during diploma training. This indicates that diploma nurses may not have adequate knowledge of research and statistical methods.

Another important statistically significant difference between diploma and degree nurses was on barrier items related to “accessibility”, which is “the relevant literature is not compiled in one place” and “setting”, which is “physicians will not cooperate with implementation”. The reason for such difference may be explained by the fact that degree nurses were more aware of research than diploma nurses. Since more nurses with degree education reported use of research findings in practice, they may have faced the real challenges than the diploma nurses most of whom reported not using research evidence in clinical practice.

Only 4.73% reported using research findings all the time in clinical practice. Our finding was similar from a study in Nigeria on nurses’ opinion of research and research utilization that showed utilization of research was minimal among Nigerian nurses. However, unlike less than 5 percent reported use in our study, the use rate was much higher among Nigerian nurses (40.8%). This may be due to the more number of nurses with higher qualifications and better research facilities in Nigeria. Also all the nurses in Nigerian study were from University hospitals which are expected to be staffed by more qualified nurses. In this study, the odds’ of utilizing research in clinical practice for nurses in this sample was twice higher for nurses who had degree education than diploma nurses. A study from Nigeria suggested that educational level have a significant impact on research base knowledge (Ofi et al., 2008).

Strength and Limitation of the study

The strength of this study is that it used a large sample of nurses from both sexes, all educational levels and almost all bigger institutions in south Ethiopia supposed to have important influence in evidence-based clinical care in nursing profession. In addition, this study includes nurses who were working at academic institutions (universities and nursing colleges) and those working at hospital level in different district of the south region of Ethiopia. In addition the sample was large enough to provide adequate power for the study and the high response rate could strengthen our findings.

The limitation of the chosen approach can be described in two ways. First, since findings were dependent on self-reported data which can vary from person to person even with similar backgrounds and working in the same institutions, there is chance of reporting bias. In addition, handing out the questionnaires can also lead to reporting bias as the respondents can be influenced by each other. A one-to-one interview method was not used because of limited resources and time. Therefore information bias may have explained some of the findings. This is more highlighted by many nurses who failed to rate 'moderate barrier' or 'greater barrier' to most of the items related to research. This may affect the overall ranking of barrier items.

Second, the number of nurses included in the sample may be varied in relation to gender and qualification limiting the representative perceptions of each group. Therefore, this study may not fully address the perception of several groups of nurses about the barriers to research utilization because the sampling technique was not stratified by many other variables. The sample is stratified only according to the educational level of nurses. The high proportion of no-opinion answers related to research may be due to nurses' lack of research knowledge and skills to decide whether the research has methodological inadequacies, the literature reports conflicting result, the conclusion drawn from research are not justified. Since this research was done in bigger institutions, it is likely that the results would have been different in smaller institutions where research is not expected to take place in the same manner.

Another limitation could be, since the BARRIEs scale questionnaires was not made for an Ethiopian setting; and it may affect the Ethiopian nurses' response to barrier items. Despite the limitation, our findings described the general picture of major barriers to research evidence utilization to the extent it is expected in weak health systems in a developing country.

6. CONCLUSION

This study examined Ethiopian nurses' perception of barriers and facilitators to research utilization. Results of this study emphasized that nurses in Ethiopia perceive limited access to research findings and weak settings (organization) as major barriers to apply research evidence in their practice. Nurses appear to understand the value of research; however they need support from top managers, government, physicians, and colleagues so that they feel that they have enough authority to influence on patient care. Only less than five percent of Ethiopian nurses utilize research findings in their daily clinical practice. Empowering nurses' education seems to have a positive impact on research use. According to the findings access to research evidence does not seem to be a major problem for nurses in developed countries. The findings from this study may have important clinical implication for practice and further recommendation. However, since the data is self report data, the result of this study should be interpreted with caution.

Recommendation and implication for nursing practice

We recommend actions at local level to address the perceived barriers and to change the current practice which has limited emphasis to evidence-based practice. This study and several prior studies highlighted that one of the major barriers to utilize research is that nurses feel they do not have enough authority to change patient care procedures. Also as this study points out, lack of authority appears universal problem for nurses to utilize research findings. Thus, we recommend further study on why nurses perceive that they lack authority to change patient care practice based on reliable evidence.

The nurses' awareness to barriers of research utilization may motivate initiation to overcome the barriers, lead to research use and movement of evidence based practice across different institutions in the region. Strengthening research and statistical training during pre-service and in-service times is important to help nurses base their practice on relevant recent evidences. It could be useful to arrange regular training program for nurses on research methods and RU at each institution. In the long time it may need establishing nursing evidence units in institutions that could take the responsibility to update nurses on current research findings and facilitate the RU in clinical practice. Unprecedented support is needed from Ethiopian government, professional organizations such as Ethiopian nurse association and other stakeholders to improve clinical nursing practice on research evidence. Support from top managers, physicians, and a government is also important for nurses RU.

Also the result from this study may indicate that higher education is important and may make a positive difference in utilization of research and improve the quality of care given to individual client. Therefore, we recommend further research on impact of higher education on research use in clinical practice in nursing.

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8. ANNEXES

Annex 1: Questionnaire

Research output utilization in clinical practice and perceived barriers among Ethiopian Nurses working in public hospitals and teaching institutions in south Ethiopia

INSTRUCTION AND AIM OF THE STUDY

Articles in nursing journals indicate that nurses in practice do not use the results of research to help guide their practice. There are a number of reasons why this might be. We would like to know the extent to which *you* think each of the following situations is a barrier to nurses' use of research to alter/enhance their practice. The aim of this study is to assess Ethiopian nurses' perception of barriers to the utilization of research findings in practice.

If you currently hold a position in a clinical site, *please answer the questions in relation to your current work setting*. If you do not currently practice, *you may refer to your last clinical experience or provide your general perceptions*.

Your participation in this study will help to further recommend strategies to overcome the identified barriers. To keep the confidentiality of the information that you have provided, do not write your name. You have the right not to participate in the study.

The questionnaire has two parts. Read the instruction carefully before you fill your answers.

Thank you for sharing your views!!!

Part I Background information: Write your answer on the space provided and circle your answer for multiple choice questions

1. Age_____

2. Sex_____

3. In which of Institution do you work?

a) Hospital

b) Academic institution

4. What is your level of education?

a) Diploma

b) Bachelor`s degree

c) Master`s degree

d) PhD

5. What is your Principal Job function?

a) Clinical

b) Education

c) Administrative

d) Others(specify)_____

6. Did you attend a pre-graduate course on research methods?

a) Yes

b) No

7. Did you attend a post-graduate course or seminars on research methods?

a) Yes

b) No

8. How many years or months have you been working in this profession (total service)?

_____ Years

9. Did you conduct research?

a) Yes

b) No

Part II -the BARRIERS to research utilization question:

Read the following statements and for each item, circle the number of the response that best represents your view. The higher the score the greater the perceived barrier will be for item 1 to item 4.

1. The nurse does not see the value of research for practice

- 1) I agree to no extent
- 2) I agree to a little extent
- 3) I agree to a moderate extent
- 4) I agree to a large extent
- 5) I have no opinion

2. The nurse sees little benefit for self

- 1) I agree to no extent
- 2) I agree to a little extent
- 3) I agree to a moderate extent
- 4) I agree to a large extent
- 5) I have no opinion

3. The nurse are unwilling to change / try new ideas/

- 1) I agree to no extent
- 2) I agree to a little extent
- 3) I agree to a moderate extent
- 4) I agree to a large extent
- 5) I have no opinion

4. There is not a documented need to change practice

- 1) I agree to no extent
- 2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

5. The nurse feels the benefits of changing practice will be minimal

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

6. Administration will not allow (participate for) implementation of research findings

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

7. Physicians will not cooperate with implementation

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

8. There is insufficient time on the job to implement new ideas

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

9. Other staff are not supportive of implementation

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

10. The facilities are inadequate for implementation

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

11. The research has methodological inadequacies

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

12. The conclusion drawn from the researches are not justified

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

13. The research has not been replicated

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

14. Implications for practice of researches are not made clear

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

15. Research reports / articles/ are not readily available

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

16. The research is not reported clearly and not readable

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

17. The nurse does not feel capable of evaluating the quality of the research

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

18. The nurse is isolated from knowledgeable colleagues with whom to discuss the research

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

19. The nurse is unaware of the research

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

20. The nurse does not feel she/he has enough authority to change patient care procedures

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

21. The nurse does not have to read research

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

22. The nurse feels results are not generalizable to own setting

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

23. Statistical analyses are not understandable

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

24. The relevant literature is not compiled in one place

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

25. The research is not relevant to the nurse`s practice

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

26. The literature reports conflicting results

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

27. The nurse is uncertain whether to believe the results of the research

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

28. Research reports/articles are not published fast enough

1) I agree to no extent

2) I agree to a little extent

3) I agree to a moderate extent

4) I agree to a large extent

5) I have no opinion

29. Write in the space provided the three major barriers from the above 28 items according to priority (1= first greatest barriers, 2= second greatest barriers, 3= third greatest barriers)

1. _____

2. _____

3. _____

30. Would you mention other barriers to the use of research findings in practice that are not mentioned in the above items in your setting?

31. What do you suggest as the facilitators to utilize research findings in practice?

32. How often do you utilize research findings in your daily clinical practice or teaching?

A. Never

B. All the time

C. Frequently

D. Sometimes

E. Very rarely

F. I have no response

This questionnaire was adapted from:

Crane, J., Pelz, D., and Horsley, J.A. *CURN Project Research Utilization Questionnaire*. Ann Arbor, Michigan: Conduct and Utilization of Research in Nursing Project, School of Nursing. The University of Michigan, 1977.

(Funk et al., 1991)

Annex 2: Permission letter to use the BARRIERS scale (refer to hard copy)

Annex 3: Ethical clearance (refer the attached documents)