

Middle East Journal of Nursing



April 2013

VOLUME 7 ISSUE 2

ISSN 1834-8742

Chief Editor:

A. Abyad MD,
MPH, AGSF, AFCNS

Editorial Office:

Abyad Medical Center &
Middle East Longevity Institute
Azmi Street, Abdo Center
PO BOX 618
Tripoli, Lebanon
P + (961) 6 443684
F + (961) 6 443685
E editor@me-jn.com

Publisher:

Ms Lesley Pocock

Publishing Office:

medi+WORLD International
11 Colston Avenue,
Sherbrooke Victoria 3789, Australia
P + (613) 9005 9847
F + (613) 9012 5857
E lesleypocock@mediworld.com.au

Editorial Enquiries:

aabyad@cyberia.net.lb

Advertising Enquiries:

lesleypocock@mediworld.com.au

While all efforts have been made to ensure the accuracy of the information in this journal, opinions expressed are those of the authors and do not necessarily reflect the views of The Publishers, Editor or the Editorial Board. The publishers, Editor and Editorial Board cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; or the views and opinions expressed. Publication of any advertisements does not constitute any endorsement by the Publishers and Editors of the product advertised.

The contents of this journal are copyright. Apart from any fair dealing for purposes of private study, research, criticism or review, as permitted under the Australian Copyright Act, no part of this program may be reproduced without the permission of the publisher.

Editorial

- 2 Chief Editor - A. Abyad

Evidence Based Nursing

- 3 Producing and utilising research: Barriers for a nursing faculty in Oman
Gillian White

Community Nursing

- 9 Chemotherapy Spill Management Policy: Policy Analysis
Bilal S. H. Badr Naga, Majd. T. Mrayyan
- 22 Health Related Quality of Life Among Adolescents Surviving Cancer: A review
Ala'a A. Al-Rashideh, Nijmeh Al-Atiyyat
- 25 Determinants of Current Contraception Use among the Ever-married Females in Rajshahi District of Bangladesh
Jahirul Islam, Shahin Reza

Letter to Editor

- 36 OP ED: A Tool and Tactic to Inspire Creative Writing Skills
Mary Lou King

FROM THE EDITOR



Abdulrazak Abyad
MD, MPH, AGSF, AFCHS
(Chief Editor)

Editorial office:

Abyad Medical Center &
Middle East Longevity Institute
Azmi Street, Abdo Center
PO BOX 618
Tripoli, Lebanon
P + (961) 6 443684
F + (961) 6 443685
E aabyad@cyberia.net.lb
W www.amc-lb.com

Publishing Office:

medi+WORLD International
11 Colston Avenue
Sherbrooke 3789
Australia
E admin@mediworld.com.au
W www.me-jn.com

A paper from Jordan looks at policy analysis of Chemotherapy Spill Management Policy. There are many different chemotherapeutic agents used in the treatment course of cancer patients. Chemotherapy agents have two unique features; the first one is low therapeutic indexes, which places patients at an increased risk for medication errors, the second, is they are considered hazardous drugs, which places patients and health care providers at risk for environmental exposure. Accidental spill of chemotherapy agents may occur during manufacture, transport, distribution, receipt, storage, preparation, and administration, as well as during waste handling and equipment maintenance and repair. As nurses and health care providers are involved in preparation and administration of chemotherapeutic agents they may expose themselves to hazardous effects that have been reported in several studies.

A paper from Sultanate of Oman looked at barriers to research for a nursing faculty. There is very little nursing research conducted or published on this topic by faculties. The BARRIERS scale was chosen and adapted to identify barriers to research production as well as utilisation in this specialised institute. The survey tool was divided into two main sections; the production of research and the utilization of research. All available faculty were invited to take part and sixty two percent participated. The authors concluded that in order to produce clinical nurses who deliver evidence based specialised nursing practice, the facilities and support for research by faculty must be prioritized in the education setting.

A paper from Jordan reviewed the Health Related Quality of Life among Adolescents Surviving Cancer. A literature search of studies published between 2007 and 2012 was conducted using the databases of Pubmed, Science Direct and

SpringerLink. The reviewed articles show that adolescents surviving cancer have a good overall HRQOL compared with their peers. Poor HRQOL was associated with female gender, brain tumor, fatigue, and late effects. Recommendations are for practices to routinely assess HRQOL among adolescent surviving cancer especially for those with high risk for poor HRQOL. Recommendations are for researchers to investigate the impact of ethnicity and socioeconomic status on HRQOL among adolescents surviving cancer.

A paper from Bangladesh looked at Determinants of Current Contraception Use among the Ever-married Females in Rajshahi District of Bangladesh. The result shows that women who have no living children are less likely to use any method. This study also envisages that, most women, both in rural and urban areas use modern methods more frequently than traditional methods.

PRODUCING AND UTILISING RESEARCH: BARRIERS FOR A NURSING FACULTY IN OMAN

Gillian White

Correspondence

Professor Gillian White SCM., RM., MTD., Cert Ad Ed
BEd., Dip.Soc.Sci (Psych), MA (Hons), PhD
Education Advisor
Directorate General Education and Training
Ministry of Health
Sultanate of Oman
Email: drgillianwhite@yahoo.co.nz

Introduction

One objective of the Oman Ministry of Health (MoH) 8th Strategic Plan 2011 - 2015 (1) is "to enhance the capabilities and skills of teaching staff and students on approach and methodology of scientific research" (p.4). The MoH estimated that in 2010 only 2 percent of the faculty who had been trained in research design and methodology had conducted research. There are no estimates of "research utilized for planning and improving teaching and related activities" (1).

The MoH one year post-basic specialized nursing Diploma programmes for registered nurses emphasizes evidence based practice and includes a core research paper. Only the specialized Community Health programme is at Bachelor degree level and that contains a module on Evidence Based Practice taught by faculty from Cardiff University.

In this paper the production and utilization of research by faculty at the only specialized nursing institute in Oman is explored using the BARRIERS to research utilisation questionnaire (2, 3, 4).

Literature

The gap between research findings and the utilization of research by nurses has been discussed over many decades (5). A systematic review of sixty three studies identified that barriers appeared consistent over time and across geographic locations (6). Barriers to utilizing research in clinical practice are complex with several overlapping factors (7). Reports list time constraints, lack of awareness of available literature, insufficient authority to make changes, inadequate skills in research appraisal and lack of support to implement change based on research evidence (8). One descriptive study, from the Arab

Abstract

Background and Objectives:

One year specialised nursing programmes for registered nurses are undertaken in one national institute in Oman, however there is very little nursing research conducted or published by the faculty. The study was conducted to discover the barriers to the production and utilization of research from the perspective of the faculty at the specialized nursing institute in Oman.

Methods: The BARRIERS scale has been used extensively to identify barriers to research utilization. This scale was chosen and adapted to identify barriers to research production as well as utilisation in this specialised institute. The survey tool was divided into two main sections, the production of research and the utilization of research. All available faculty members were invited to take part and sixty two percent participated.

Results: Accessibility, facilities and aspects of the research itself were seen as barriers to the utilization of research, while time, workload and lack of motivation were perceived as barriers to producing research.

Conclusion: In order to produce clinical nurses who deliver evidence based specialised nursing practice, the facilities and support for research by the faculty must be prioritized in the education setting.

Key Words: Nursing, Nursing Education and Research, Evidence based practice

world, to identify barriers and facilitators of research utilization among Iranian nurses (9) demonstrated consistency with Western findings such as time, inadequate facilities, and lack of authority.

An overview of current literature about barriers to research utilisation from scientific nursing journals, focusing on two hundred and twenty six articles published between 1995 and 2005, found that barriers related to the organisation, communication of research and the nurses' competence in clinical research, strongly suggested education institutes needed to increase nurses' research knowledge and skills, and provide nurse educators with research time (7).

As there were no studies found exploring barriers to producing research and therefore no suitable tool available, the BARRIERS tool was modified to apply to nursing educators.

The BARRIERS tool

The survey tool on barriers to research utilization in clinical practice used in the reported research is the validated Barriers' Scale (2, 3, 4). The authors (2) believed that a barrier hindering the implementation of change was the lack of an effective diagnostic tool. After studying the literature the team developed the BARRIERS scale based upon Rogers' theory of diffusion of innovation (10, 11). Change is perceived to depend on the Characteristics of the Adopter; the Characteristics of the Organization; the Characteristics of the Innovation; and the Characteristics of the Communication. They also studied the Code and Utilisation of Research in Nursing (CURN) project where nurses were supported to implement the findings in practice (12). The validity and reliability of the BARRIERS scale were tested along with an investigation of the relationship between the four factors in Rogers' model (2).

A review of forty five studies where the BARRIERS scale had been used found the same barriers predominated (13). With continuous consistency over the years it raises questions about why the barriers have not been overcome (6).

While an assumption was made that similar findings would be found among the specialty nursing faculty in Oman the research was specifically conducted with the aim of making transparent the perceived barriers to management so that rationale for implementation of change was supported by evidence. An advantage with the current study is the MoH objective to enhance the capabilities and skills of the teaching staff in research. Unlike countries where similar studies were conducted, utilization (and production) of research is supported by the Oman government which makes strategies for change more likely to be implemented.

Aim

The aim of part one was to identify barriers to the utilisation of research. The aim of part two was to identify barriers to the production of research as perceived by the faculty of the nursing specialty institute.

Design

A modified BARRIERS survey was divided into two main sections: the utilisation of research using the full BARRIERS to research utilization survey; and a modified version on research production, adapted to reflect nursing education through minor changes where the words "nursing education" replaced "clinical practice".

Part one consisted of thirty questions and Part two consisted of sixteen questions where respondents were asked to rate each item on a 4 point Likert scale from 1 = no affect to 4 = a great deal of affect plus a fifth 'no opinion' option. Open ended questions were included for the respondents to add barriers.

In this study the characteristic divisions Adopter, Organization, Innovation, and Communication (2) were identified as the Nurse [in this case Faculty], the Setting, the Research, and the Presentation and Accessibility of the research as previously modified (5).

Ethics approval

The proposal was approved by the Institute Research Committee and permission was obtained from the Dean. Faculty was informed by memorandum about the aims, purpose and details. Each questionnaire was numbered and the number matched to a master list held by the Dean's office where only one administrator (non researcher) had access to the list (but not the questionnaires). Non-responders were reminded on two occasions by the administrator. The researcher was not aware of who had responded. At the end of the data collection period the master list was shredded by the administrator to ensure that anonymity and confidentiality were maintained. Consent was implied by return of completed questionnaire.

The statistics for the institute indicated a male to female ratio of 1:3 and a mean age of 45 years. One faculty member held a PhD, twenty four held Master's degrees, and twelve Bachelor's degrees. All available faculty were invited $N = 37$ and $n = 23$ (62%) faculty responded. Some members were on long term leave or absent for various reasons. The number was considered representative of the total faculty. Feedback to the faculty and their response about the results confirmed the overall interpretation and findings.

Analysis

As the group of respondents in the current study was small the analysis was confined to the descriptive level. Frequencies of responses to each question were tabled on an Excel sheet. The mode of response per question was colour-coded to represent "little barrier," "moderate

barrier” and “a great barrier.” The results are outlined as Part One (Barriers to research utilization) and Part Two (Barriers to production of research).

Results (Part ONE):

Utilisation

Questions 1, 6, 12, 13, 19 clustered at Likert 4 “a great barrier” and Questions 7, 24, 26 clustered at Likert 3 “a moderate barrier” as shown in Table 1.

Two of the great barriers (Statements 1, 12) concern the Characteristics of Presentation and Accessibility of research. Five statements (6, 7, 13, 19, 26) concern the Setting; and one (24) the Research itself.

Qualitative responses

From the qualitative responses, the greatest barrier concerned lack of support (both collegial and by authorities) to be able to make changes.

“Other colleagues are not supportive of change”

“Resistance to change by clinical people”

Other comments suggested that there was “lack of statistical abilities to be able to understand quantitative research”; “resistance to change”; “inadequate facilities”; “poor participation in research because of lack of knowledge and practice of how to do it right.” Staff felt “isolated from colleagues who are interested in research”. Some did “not see the value of doing research in their current position.”

Results (Part TWO):

Production

As very little research was being produced the differentiation between the two categories “moderate and great” was not meaningful. Therefore the moderate and great barrier results were collapsed into one domain and percentages were

calculated. The main barriers to producing research are shown in Table 2 (next page) along with a description. In addition, while 63.6% considered their managers were very supportive of research, 77.3% had no interest in personal benefits of producing research.

Qualitative responses

Free responses highlighted the need for confidence, a healthy environment and fairness in workloads. Assistance from an experienced research committee and statistician plus access to databases, were also seen as important facilitators of being able to produce research.

The three greatest barriers described were:

- i) **Time** - “there is not enough time to conduct research”
- ii) **Workload** - “negative attitude of people toward research means there is no reduction in workload”

Question number	Statement (Likert 3/4)	Mode (n)	Cluster (Likert)	Median (Likert)
1.	Research results are not readily available	18	4	3
12.	The relevant research cannot be found in one place	16	4	3
6.	The facilities are inadequate to implement the research	14	4	3
13.	You believe you do not have the authority to change practice	14	4	3
19.	Administration will not allow implementation of research findings	8	4	3
26.	Colleagues are not supportive of change	15	3	3
7.	No time to read research	15	3	3
24.	The literature reports conflicting findings	10	3	2

Table 1: Factors perceived as moderate to great Barriers

iii) **Lack of drive and passion to undertake research** - "it takes effort" "there is no initiative.

Discussion

The analysis of Likert scales has been debated with some arguing the data should be treated as ordinal and others as interval (14). In this study the group is homogenous

which delimits the variability and the data is considered ordinal in that there is a logical ordering of the categories. Some statisticians recommend using the median and mode for such data (15) as order is relative and shows only sequence. Thus the decision was made to report the median and mode of response to each question in part

one and the percentages in part two.

In part one three factors were identified -

- 1) the Research,
- 2) the Setting, and
- 3) the Presentation and Accessibility of the research. Five organizational concerns relating to Setting can be

STATEMENT	MOD + GREAT %	DESCRIPTION
12. You are not confident in data analysis techniques	86.4	A moderate barrier
2. You want to concentrate on further educational qualifications	81.8	Over 50% perceived the greatest barrier was the need to concentrate on further education (Bachelors, Masters)
3. There is not enough time to conduct research	81.8	Over 45% perceived time to be a great barrier
7. Your work environment facilities are inadequate for you to undertake research	81.8	The work environment was perceived to be a moderate barrier
14. You see more value in utilizing other people's research	81.8	A moderate barrier
6. You do not know enough about research methods	77.3	A moderate barrier
4. You do not think others are experienced enough in research to work with you	72.7	Over a third considered this a moderate barrier
9. You do not feel comfortable enough to undertake research	68.2	A moderate barrier
15. There is no career pathway for a nursing researcher	63.6	Of this group 18% thought not having a career pathway was a great barrier
11. You do not know enough about validity and reliability in research	54.6	A moderate barrier
13. You believe undertaking research is too difficult	54.6	A moderate barrier
5. You do not know how to write a research proposal	54.0	A moderate barrier
1. You do not see the value in undertaking research in your current position	50.0	Ambivalence

Table 2: Factors perceived as Barriers to the Production of Research

summarized as Barriers regarding facilities, time, authority, implementation and collegial support. While other factors regarding the ability to find relevant research and manage conflicting research results present as Faculty and Presentation/Accessibility of research characteristics, they may also be viewed as strongly linked to the Organisation/Setting.

In one of the responses (item 24: "The literature reports conflicting findings") the median is different to the median of the other responses indicating the barrier is actually small to moderate. In item 19 "Administration will not allow implementation of research findings" the mode is small although the median demonstrates a moderate barrier. This latter result is skewed by the larger number of "no opinions" recorded (7).

An Australian study (8) surveyed 761 nurses' opinions regarding the barriers and the facilitators of research utilization. The barriers were time constraints, lack of awareness of available literature, lack of authority to change practice, inadequate research skills in particular critique and lack of support for implementation of change. The faculty in this study, as seen in Table 1, had similar opinions albeit in the education setting. Such findings are "remarkably consistent with studies in the USA, UK and Northern Ireland" (8, p.304).

In part two (production of research) four of the barriers are related to the characteristics of the Setting: time, other experienced staff to work with, inadequate facilities and lack of career path for researchers. Faculty characteristics however were also visible and cluster around lack of knowledge and experience in research. The drive to gain Bachelor's, Master's or PhD qualifications is paramount to be eligible for better positions. Thus the ambivalence about the value of producing research in the current position may reflect

an organizational priority to produce teachers, not researchers. Indeed, the lack of concern about personal benefits gained from producing research emphasizes the compulsion to gain higher academic qualifications. While management was supportive and many of the factors are under managerial control, the focus was on acquiring suitably qualified specialist nursing teachers and research outputs were not rewarded.

Little nursing research has been undertaken in Oman as research utilization and evidence based nursing practice is a fairly new concept and nursing research in its very early stages of development. However a study to identify barriers and facilitators to research utilization was undertaken in Iran among 410 nurses from educational hospitals and nursing schools associated with Tehran Medical Sciences University (9). The findings are similar to those found in this Oman study: time, inadequate facilities, not enough authority to change practice. The authors categorized the findings into two main groups i.e. organization and human resources. They concluded that the Iranian health care system did not provide incentives for nurses to engage in or read research due to time availability through nurse shortages and stated that "the most important organizational change that needs to occur is the provision of available facilities for nurses to use research evidence" (9, p. 2194).

Some authors (6, 13) have argued that identifying barriers has not provided evidence of change. Rather nurses outside of North America were significantly more likely to view inadequate facilities as a barrier (6). It is important that the organization in this study supports research by providing the required research environment and adjusting workloads so that faculty can prepare and support specialty nurse graduates utilize research and implement change on return to clinical practice.

In part two of the study, ten of the statement responses are Faculty and four are Setting (a ratio of 5:2). Most barriers to producing research are related to issues such as abilities, motivation and confidence. The concept of time as a barrier, however, may not signify 'real time' but rather indicate improper use of time due to lack of motivation through lack of energy, knowledge and reward. In a Norwegian study (16) heavy workloads resulted in nurses being too tired to undertake research related activities.

The opportunity to read, plan, implement, analyse and write up research reports as a legitimate activity during working hours must be provided by the organization if the strategic research goals are to be met. In addition, while there is an admirable drive to increase the number of PhD nurses in Oman, and full scholarships are being awarded, most of the candidates are prepared for research only in theory.

Conclusion

The Nursing Institute should not be singled out as failing to provide an environment conducive to research as the findings demonstrate that the same barriers exist throughout much of the nursing world. However, the findings should alert the authorities that, in order to produce clinical nurses who deliver evidence based practice, the facilities and support for research must be prioritized in the nursing educational settings, where the nurse educators can act as role models for research. This prioritization is especially important when the vision is to upgrade entry to the nursing profession to baccalaureate level and nursing specialization programmes will transit from diploma to baccalaureate and master's degrees.

Research is now needed to explore whether there is a relationship between perceptions of barriers to research utilization and production, and the utilization of evidence based practice in the education and practice of nurses contextualized to the Omani culture and health service

environment. Engaging nurses in research in Oman is most important and opportunities to practice hands on research can only add to the success of their future studies.

Acknowledgements: the Ministry of Health, Oman, for the time and financial support.

Ms Muna Ramadan for organizational assistance.

References

1. Author. Ministry of Health Strategic plan 2011 - 2015. 2011 (English version). Oman: MoH.
2. Funk SG, Champagne MT, Wiese RA, Tornquist EM. BARRIERS: The barriers to research utilization scale. *Applied Nursing Research* 1991a; 41: 39 - 45.
3. Funk SG, Champagne MT, Wiese RA, Tornquist EM. Barriers to using research findings in practice: the clinician's perspective. *Applied Nursing Research* 1991b; 4(2): 90-95.
4. Funk SG, Tornquist EM, Champagne MT. Barriers and facilitators of research utilization. *Nursing Clinics of North America* 1995; 30: 395 - 407.
5. Bryar R, Jose Closs S, Baum G, Cooke J, Griffiths J, Hostick T, Kelly S, Knight S, Marshall K, Thompson DR. The Yorkshire BARRIERS project: diagnostic analysis of barriers to research utilization. *International Journal of Nursing Studies* 2003; 40(1): 73 - 84.
6. Kajermo KN, Bostrom A-M, Thompson DS, Hutchinson AM, Estabrooks CA, Wallin L. The BARRIERS scale - the barriers to research utilisation scale: A systematic review. *Implement Sci* 2010; 5:32. Published online 2010 April 26. doi: 10.1186/1748-5908-5-32
7. Markussen K, Forskningspsykeleier F. Barriers to research utilization in clinical practice. *Vard I Norden Nordic Journal of Nursing Research and Clinical Studies* 2007; 83(27): 47 - 49.
8. Hutchinson AM, Johnston L. Bridging the divide: a survey of nurses' opinions regarding barriers to and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing* 2004; 13: 304 - 315.
9. Mehrdad N, Salsali M, Kazemnejad A. The spectrum of barriers to and facilitators of research in Iranian nursing. *Journal of Clinical Nursing* 2008; 17: 2194 - 2202.
10. Rogers EM. *Diffusion of Innovations* (1st edn.). New York: Free Press, 1983.
11. Rogers EM. *Diffusion of Innovations* (5th edn.). New York: Free Press, 2003.
12. Horsley JA, Crane J, Crabtree MK. *Using research to improve nursing practice: a guide CURN project*. New York: Grune and Stratton, 1983.
13. Carlson CL, Plonczynski DJ. Has the BARRIERS scale changed nursing practice? An integrative review. *Journal of Advanced Nursing* 2008; 63(4): 322 - 333.
14. Miles J, Shevlin M. *Applying regression and correlation: A guide for students and researchers*. London: Sage Publications, 2001.
15. <http://www.childrensmercy.org/stats/definitions/ordinal.htm> retrieved 18 July, 2011.
16. Hommelstad J, Ruland CM. Norwegian nurses' perceived barriers and facilitators to research use. *Aorn Journal* 2004; 79: 621-634.

CHEMOTHERAPY SPILL MANAGEMENT POLICY: POLICY ANALYSIS

Bilal S. H. Badr Naga (1)
Majd. T. Mrayyan (2)

(1) Bilal S. H. Badr Naga, RN, MSNs
 The Hashemite University

(2) Majd. T. Mrayyan, RN, MSc, PhD, Professor
 The Hashemite University

Correspondence

Bilal S. H. Badr Naga, RN MSNs,
 The Hashemite University
 Amman, Jordan

Email: Bilal_badrnaga@yahoo.com

Introduction

There are many different chemotherapeutic agents used in the treatment course of cancer patients (WHO, 2012). Chemotherapeutic agents have been classified as hazardous by the National Institute for Occupational Safety and Health (NIOSH, 2004). Chemotherapeutic agents are therapeutic agents which are known to be toxic to cells through their action on cell reproduction and are primarily intended for the treatment of neoplastic disorders (Amiruddin, 2002). Chemotherapy agents have two unique features; the first is the low therapeutic indexes, which places patients at an increased risk for medication errors, the second is they are considered hazardous drugs, which place patients and health care providers at risk for environmental exposure (Griffin, 2003).

Accidental spill of chemotherapy agents may occur during manufacture, transport, distribution, receipt, storage, preparation, and administration, as well as during waste handling and equipment maintenance and repair (Amiruddin, 2002). As nurses and health care providers are involved in preparation and administration of chemotherapeutic agents they may expose themselves to hazardous effects that have been reported in several studies.

Kyprianou, Kapsou, Raftopoulos, and Soteriades, (2010) reported that nurses and health care providers complain of acute symptoms related to exposure of chemotherapeutic agents such as skin irritation, sore throat, cough, dizziness, headache, hair loss, allergic reaction, diarrhea, nausea, and vomiting. Also, frequent abortion has been reported by health care providers who were exposed to chemotherapeutic agents (Martin, 2003; Kyprianou, et al. 2010); and disabilities in the offspring of nurses who handled chemotherapy during pregnancy.

Abstract

There are many different chemotherapeutic agents used in the treatment course of cancer patients. Chemotherapeutic agents have been classified as hazardous by the National Institute for Occupational Safety and Health. Chemotherapeutics agents are therapeutic agents which are known to be toxic to cells through their action on cell reproduction and are primarily intended for the treatment of neoplastic disorders. Chemotherapy agents have two unique features; the first is the low therapeutic indexes, which places patients at an increased risk for medication errors; the second, is they are considered hazardous drugs, which place patients and health care providers at risk for environmental exposure. Accidental spill of chemotherapy agents may occur during manufacture, transport, distribution, receipt, storage, preparation, and administration, as well as during waste handling and equipment maintenance and repair. As nurses and health

care providers are involved in preparation and administration of chemotherapeutic agents, they may expose themselves to hazardous effects that have been reported in several studies.

Key words: policy, chemotherapy, spill, cancer, hazardous drugs.

Furthermore, Martin, (2003) and Smith, (2012) (?showed) in their studies an increased rate of certain cancers in health care providers (HCP), as a result of handling chemotherapeutic agents specifically, when mixing and administering these agents, accidental spills, sprays, chemo bag punctures and frequent contact with hazardous drugs.

Centers for Disease Control CDC (2010), confirm that chemotherapeutic agents continue to contaminate the work spaces where they are used, and in some cases it is still being found in the urine of those who handle them, despite knowledge of safety precautions. Also, the National Institute for Occupational Safety and Health (NIOSH, 2004) reports that exposure to chemotherapeutic agents have not been determined by a reliable method (NIOSH, 2004). Furthermore, in the United Kingdom, the Greater Manchester and Cheshire Cancer Network GMCCN, (2009) reported that the health care workers who are involved in the handling of chemotherapy drugs, and if not adequately protected, will absorb harmful quantities of these drugs through their skin. Health care institutions who use these agents developed chemotherapy spill policy to guide nurses and other health care providers in order to protect them from the dangerous health consequences that may result from spillage. Thus, it is significant to nurses, stakeholders, and administrators to review and analyze the chemotherapy spill policy.

Purpose

The purpose of this paper is to review and analyze the chemotherapy spill policy in one tertiary care hospital (Islamic hospital) in order to identify issues and propose alternative solutions. Suggested alternatives will be discussed with regard to strength, weaknesses, administrative ease, cost, benefit, effectiveness, equity, legality and the acceptability of the policy.

Islamic Hospital Background

Islamic hospital (IH) was established in 1982 in Amman as a private hospital. The total capacity of the hospital is 250 beds. Islamic hospital is considered the first teaching hospital in the Jordanian private health sector. Although, there are many oncology patients treated in IH, and chemotherapy management approach is considered one of the main procedures done to cancer patients, there is no special department for oncology patients, but there is a policy for chemotherapy spill management.

Islamic Hospital Chemotherapy Spill Management Policy Description

The purpose of chemotherapy spill management in IH is to manage chemotherapy spill. This policy is applicable for all hospital staff. The purpose, scope, definitions, policy statement, responsibility, and procedure are clearly stated in the policy manual. Also, the policy steps are stated as following: (1) Chemotherapy spill kits to be kept in all departments where chemotherapy is administered; (2) Clean up is a nursing responsibility and second clean up will be performed by housekeeping; (3) If linen is involved in the spill place it in a double blue bag; and (4) If chemotherapy agent comes in contact with the skin, the area must be washed with a good amount of water and soap for at least 5 minutes. The implementation of the policy is the responsibility of the head of the department and the continuous education department.

Verify, define and detail the problem

Issue Statement

Does the chemotherapy spill policy in Islamic hospital provide a safe environment and prevent hazardous effects to health care workers?

Scope of Problem

Exposure to chemotherapeutic agents may occur during preparation, administration, and disposal which may impose an

occupational hazard for health care provider and workers (CNSA, 2003). The chemotherapy spillage not only affects the healthcare providers, but also, patients receiving chemotherapy and their family members, can also be exposed to the hazards of chemotherapy drugs when they handle contaminated equipment or body fluids (CNSA, 2003).

Research studies have identified chemotherapeutic agents in the urine of the workers and has negative genetic responses in the health care providers (Valanis, et al. 1993; Thomas, 2006). Hazards of exposure to chemotherapeutic agents can occur by various activities such as direct contact, when preparing, administering, cleaning, inhalation, storage and disposal of chemotherapy waste. Thomas, Melissa, & McDiarmid, (2006) and Polovich, (2004). In a study done by Mason (2003) to detect the level of the chemotherapy drug after collecting a sample from the outside of chemotherapy bags prepared in the pharmacy and delivered to nursing station for administration, Mason reported that when touching the bag of chemotherapy without proper chemotherapy protection equipment, exposed the nurses to chemotherapy. Mason also reported that no contamination was detected on the bag of chemotherapy when received from the pharmacy; the contamination happened in the pharmacy during preparation and the contamination was not seen by the nurses (Mas on, 2003). This shows the spillage may happen in any stage of preparation or administration.

Moreover, chemotherapeutic agents may be used for diseases other than cancer, such as Lupus, and multiple sclerosis (Polovich, 2004). In some hospitals these drugs are being administered by nurses without proper training or being chemotherapy certified which may increase exposure to chemotherapeutic agents for healthcare providers (Polovich, 2004).

Health Impact

There are many adverse health problems caused by exposure to chemotherapeutic agents especially to health care providers who handle them or work in the surrounding setting of chemotherapy administration (NIOSH, 2007).

Acute side effects of exposure to chemotherapeutic agents included skin irritation, sore throat, cough, headache, hair loss, allergic reaction, diarrhea, nausea, and vomiting (Kyprianou, Kapsou, Raftopoulos, and Soteriades, 2010; NIOSH, 2007).

Also, infertility, miscarriage, preterm labor, and frequent abortion have been reported by female health care providers who exposed to chemotherapeutic agents (Martin, 2005; Kyprianou, Kapsou, Raftopoulos, & Soteriades, 2010). In addition, disabilities were found in the offspring of nurses who handled chemotherapy during their employment (Martin, 2005). Furthermore, Fransman (2007) reported that health care providers who handled chemotherapeutic agents and are exposed to these agents took a longer time to have children than other health care providers who were not exposed to chemotherapeutic agents.

Many research studies confirmed that chemotherapeutic agents have been found in the urine of health care providers who handled chemotherapeutic agents, thus, there is an increased risk of cancer among health care workers (Wick, 2003; Connor, 2006; NIOSH, 2007). These findings raised the question of adherence to spillage policy or effectiveness of policy for safe handling of chemotherapeutic agents.

Economic Impact

Chemotherapy has been administered in hospitals or clinics used to treat cancer patients via intravenous infusion and recently there has been an increase in the use of self-administration of oral chemotherapy at home. Although,

using oral chemotherapy at home helps in decreasing the cost and use of health resources, it may increase the risk of exposure to chemotherapy spillage during administration if patients do not strictly adhere to safety precautions (Aisner, 2007; Weingart, Brown, Bach, & et al. 2008). Thus, compliance with strict policy and procedure is very important to prevent the potential health risk due to exposure, which may have a negative economic impact on patients and their families to manage the adverse effects of chemotherapy exposure.

There is a lot of expenditure on illness and injuries to health employees, families, and the surrounding environment. The impact may be financially and emotionally, which involves follow-up testing, treatment and anxiety and stress. The ultimate goal in any health care institution is to protect the staff from the risks of chemotherapy spillage that can leave them out of action for months, or even permanently. The International Labour Organization (ILO, 2003) estimated that the cost of global work - related injuries and illness accounts for 4% of the world's gross domestic product. Employers face costly early retirement, loss of skilled staff, and absenteeism, due to work-related accidents and diseases (Giuffrida, Lunes, & Savedoff, 2002). Also, Christopher Landrigan et al. (2004) reported that occupational hazard that results from unsafe workplaces affects the healthcare institution by increasing the cost and reducing ability to provide services. Moreover, Erinn and colleagues (2012) reported that reducing chemotherapy spillage by health care providers and workers can save more than 600,000 dollars every year in Canada. Thus effective implementation of chemotherapy drug spill policy will help decrease the cost, time and effort lost. Ultimately, decision makers must consider such costs as investment, not losing money. Health care institutions would have to value the significant expense to comply with this policy and the real cost must be

weighed against the potential high cost of the treatment of the health care worker.

Legal and Ethical Impact

From the ethical point view, health care workers do not wish to see unnecessary injuries or illness occurring (ILO, 2003). Ethical challenges in occupational health include issues related to privacy of employees's health information, balancing of cost and benefits, health screening, surveillance of employees, and employees adaptation to health protection programs and policy related issues (Rogers, 2012).

National Institute of Occupational Safety and Health (NIOSH, 2007) demonstrated that healthcare institutions have poor laws and regulations that examine and analyze the cause of chemotherapy spill issues and its sources, to prevent recurrence. Also, NIOSH assured that every health care institution must have a comprehensive safety program for controlling workplace exposure to chemotherapeutic agents that must include training, work practices, and personal protective equipment (NIOSH, 2004). Failure to maintain and provide the necessary equipment is a legal issue. Moreover, NIOSH, (2004) reported that reproductive risks have been associated with exposure to hazardous drugs and an alternative duty should be offered to individuals who are pregnant, or breast-feeding. All workers who handle hazardous drugs should be routinely monitored in a medical surveillance program (NIOSH, 2004).

Limited resources may stand as a barrier in the road of implementation of chemotherapy spill policy; this is a legal and ethical issue that may face health care professionals, thus it is a duty to all health care institutions to present all necessary resources to protect staff and patients from the side effects of chemotherapeutic agents. It is also the duty of the health care institution to develop strict measures to assess and

evaluate staff adherence to the policy and procedures who handled these chemotherapeutic agents, in particular, chemotherapy spill policy, otherwise it implies a legal and ethical behavior.

Who is concerned? Stakeholders

To discuss the issue of chemotherapeutic agents spillage, all stakeholders who have a direct or indirect relationship and are affected by the chemotherapy spillage issue, should be involved. The governments, healthcare institutions, healthcare professional/workers and medical industry should have a common interest, goal, and work together to achieve the intended goals.

Engaging with stakeholders, to develop well considered policy that reflects diverse perspectives in order to enhance the health and well-being of the people and prevent all unwanted negative effects of chemotherapy spillage, it has been necessary to develop a policy for preventive measures to be taken during the preparation and administration of chemotherapeutic agents and managing of chemotherapy spill during occurrence. In Jordan, each health care institution develops a policy to promote safety and ensure the quality of care. The decision makers (stakeholders) who should be involved in formulating the chemotherapy spill policy is a shared team that encompasses the government (Ministry of Health), health care providers and workers, medical industries, and the health care institution.

At the health institutional level, there is a need to adopt policies that respond to the needs of patients, health practitioners and other staff. It is the responsibility of the health care institution to maintain the physical environment; service coordination and continuity of care; multi-disciplinary collaboration and partnerships, patient and staff education and training; monitoring and measuring safe, quality and

ethical services. During monitoring the application of policy by health care workers, is to encourage staff to report the incidents, not for disciplinary action but for identifying problems and finding solutions.

At the level of health care workers, building a stronger evidence base on ways to improve health care and the health system itself to achieve better health outcomes, satisfaction of policy and ensure adherence to standards of care; and public accountability for maintenance of professional standards achieves a culture of quality and system improvement and not destructive litigation and blame. Monitoring and addressing health care workers' concerns about health care quality is imperative. Also every health care worker is responsible in terms of policy application and should be acquainted with an advanced training and educational program that relates to chemotherapy usage to prevent occurrence of spillage and the ability to handle the spillage of chemotherapy in a safe manner according to the policy.

At the level of the government, a supportive health system will ensure that interventions implemented at the health institution, health practitioner and health consumer levels are effective and the performance evaluation systems have relevant policies. In addition there is a need to build a stronger evidence base on ways to improve health care and the health system itself to achieve better health outcomes, and ensure the strengthening of the monitoring of professional standards.

At the level of the medical industry, there are well-defined regulations for manufacturers and distributors to ensure safe transport and handling of chemotherapy drugs., although the initial step for safe handling of chemotherapy agents begins with the manufacturer. Follow up with new materials, resources and information regarding chemotherapeutic agents should be updated and provided to all stakeholders. The stakeholder's

needs, services provided and desired outcomes are clarified in Table (1) (opposite page).

Policy Analysis

Before analyzing the current chemotherapy spill policy for Islamic hospital, I gathered information and resource materials such as policies from national and international health organizations. To identify the gaps in this existing policy, I consulted with the concerned staff in Islamic hospital to ensure that appropriate personnel protective equipment (PPE) was identified for use in the hospital and to identify issues in chemotherapy policy, in addition to searching for policy issues through books, publications, and research data, to develop solutions to the policy issue; the advantages and disadvantages of potential policy solutions; provide advice based on detailed analysis of the spillage issues; and generate recommendations to address the issue.

Policy Evaluation

In order to evaluate the chemotherapy spill policy we should identify the major missing factors that lead to occupational hazards at work place, then find the best alternatives that may strengthen the policy and protect the health care providers from hazards of chemotherapy spill exposure.

There are many problems during the evaluation process such as: lack of statistical data base, absence of national health information system regarding incident reporting, lack of information regarding the effectiveness of implementation of such policy on the health workers, and lack of sharing information among different health sectors. Thus, the governmental and private health sectors must work together in order to establish a national health statistical system, and national incident reporting system. This will help occupational health researchers; disseminate findings and recommendations, and establish unified training material. Also, this collaboration may help in minimizing

Stakeholders	Needs	Services Provided	Desired Outcomes
Governments	<p>Coordinate occupational health services with overall health services.</p> <p>Ensure the establishment and application of chemotherapy spill policy.</p>	Maintain employer responsibility for hazards and responsibility for access to health services and related policy.	More protection for health workers.
Healthcare institution	<p>Correct implementation of available labor legislations.</p> <p>Providing a safe environment through purchasing the appropriate personnel protective equipment.</p> <p>Introduce new technology related to chemotherapy.</p>	<p>Ensure attendance of the education and training courses of all health care workers who deal with chemotherapy</p> <p>Strengthen professional expertise in occupational health.</p>	Promote satisfaction of healthcare workers.
Healthcare professional/workers	<p>More protection of workplace hazards, and participation in education and training program.</p> <p>To receive proper compensation including treatment expenses in case of exposure to hazards.</p> <p>Include housekeepers in training courses.</p>	Application of safety measures and precautions during manipulation of chemotherapy.	Safe work environment.
Industry (chemotherapeutic agents factories)	<p>Adding new technology to develop safety and security measures in production and transporting materials</p> <p>To cooperate and consider the reports from the service data analysis.</p>	<p>Maintain high technical procedures during production, storage.</p> <p>Limited public access to chemotherapy materials.</p>	<p>Safer chemotherapy containers.</p> <p>Less incidents of spillage.</p>

Table 1: Stakeholder of Chemotherapy Spill Management Policy

Alternative	Effectiveness	Legality	Ease of application	Equity	Cost effectiveness	Political acceptability
Education and training	Highly effective	Legal	Easy	Yes	Depend on level and type of training	Acceptable
The operation of safe working practices	Effective	Legal	Easy	Yes	Effective	Acceptable
The use of medical devices which incorporate protection safety features.	Effective	Legal	Not easy	Yes	Depends on resource available	Acceptable
Medical surveillance	Effective	Legal and ethical	Easy	yes	Expensive	Acceptable
Support key research in public health systems, occupational health policy.	Effective	Legal	Easy	Yes	Depends on resource available	Acceptable

Table 2: Alternative solution

the number of injured health workers which is the main goal of spill management policy. Occupational health and safety legislation must be frequently reviewed and updated accordingly.

Alternatives

The most important issues are the lack of training and educational programs for the health workers; poor or absence of safe working practices; personal protective equipment (PPE); technology use; medical surveillance and research support. Training and educational programs are one of the most important alternatives that should be implemented. All mentioned proposed alternatives will be evaluated in terms of administrative ease, cost and benefits, effectiveness, equity, and legality.

Table (2) summarizes the alternative solutions that may help in controlling and minimizing health hazards associated with chemotherapy spillage.

A. Training and Education

Effective training and education regarding related precautions is an important aspect in dealing with workplace hazards. Such training should be incorporated in all relevant educational programs for healthcare employees. Personnel who are relatively new to the healthcare environment are amongst those most at risk. Performing continuous follow-up and development of occupational health and safety is a very important step. Conducting of regular refresher training courses may help experienced healthcare workers,

who have developed a negative attitude and consider such risks as normal and expected, to change their behavior. Such educational programs should clearly focus on risks of exposure based on strong evidence from research findings.

Staff with minimal experience or no experience may be responsible for handling hazardous drugs in units or areas that do not normally care for cancer patients with chemotherapy management. Specific training is required to prepare those staff before assigning them to such a procedure (Brown et al., 2001). In the case of staff shortage, administrators and supervisors must provide appropriate and qualified staff who are able to accomplish the new assignment safely. When chemotherapy administration is an exclusive service, such as in

Subject	Strength	Weaknesses	Need
Purpose	Clearly stated, to manage chemotherapy spill		
Scope	Clearly stated, for all hospital staff		
Responsibilities	Clearly stated: clean up spills is the nursing responsibility and the second clean up will be by house keeping	Not all hospital staff are trained to manage spill of chemotherapy	Training for all hospital staff
Spill kit		Access the nearest spill kit	Spill kit should be available in each department
PPE		Using face mask Using disposable gloves	A respirator mask Nitrile gloves
Setting		Administering chemotherapy in any patient's room	Needs special room
Biological Safety Cabinets		Mixing chemotherapy agents in medication room	Chemotherapy drugs compounded in the Pharmacy . Mixing chemotherapy in a Class II biological safety cabinet.
Compounding Techniques		Not stated in the policy	Care must be taken to avoid puncturing of gloves and possible self-inoculation. Remove all hand jewellery . Syringes and I.V. sets with Luer-lock fittings should be used

Table 3: Strength and weaknesses of Islamic hospital chemotherapy spill policy

oncology infusion areas, providing fully cross-trained staff can be problematic (Polovich, 2004).

When new information becomes available, it should be provided immediately to employees. When a different job assignment involves new risks, the employee

should receive fresh training and information about the hazards. Performing prevention programs to prevent hazards is a primary prevention strategy (Polovich, 2004). Also, each healthcare facility should have an effective reporting system in order to be able to assess the level of illness and injuries related and to

measure the benefits of preventative measures taken.

B. Safe Working Practices

Each health care facility should establish policies and associated procedures to reduce the incidence and severity of the health risks that the health care professional may

Action to be taken/ Expected outcome	Who	When	Resources
Training program			
Provide safe practice			
Using research			
Using technology			
Medical surveillance			

Table 4: Develop an action plan to implement the selected alternative. An action plan identifies tasks, timelines, resources, and responsibilities

Packaging and segregation	<ul style="list-style-type: none"> Effective packaging and segregation techniques should be used to avoid contamination prior to distribution. Packaging should clearly state whether segregation techniques have been used so that individuals unpacking the medications can take additional precautions if necessary. Packaging material should be durable, and able to contain any accidental leakage during handling and transport. Package label should indicate that the agent is cytotoxic. Distributors should ensure that the labeling on the packaging is intact and that oral chemotherapeutic agents are stored and transported separately from non-chemotherapeutic agents
Educational materials	<ul style="list-style-type: none"> Manufacturers should provide educational material regarding safe handling to each stakeholder, including physicians, RNs, pharmacy personnel, patients, and caregivers. Manufacturers should update patient education materials as new information becomes available.

Table 5: Recommendations for Manufacturers and Distributors

encounter if there is no clear policy to be followed. Training and education of staff needs to be reinforced with working policies and procedures that are implemented in day -to-day routines. Also, a healthy working environment and safety activities should be maintained. Cooperation and collaboration should be maintained among employers and health care providers. Health care professionals have the right to participate in decisions concerning their own work, particularly, concerns about occupational health and safety.

C. Technology Use

Improved education, training and attention to working practices cannot alone eliminate injuries. However, medical device technology exists today to protect medical staff from unintentional injuries. Medical devices are available with additional safety features to prevent injuries.

D. Medical Surveillance

All workers who handle hazardous drugs should be routinely monitored in a medical surveillance program (ASHP, 2006). Medical

surveillance involves the collection and interpretation of data for the purpose of detecting changes in the health status of working populations (ASHP, 2006). Medical surveillance programs involve assessment and documentation of symptom complaints, physical findings, and laboratory values (such as a blood count) to determine whether there is a deviation from the expected norms. Limited resources may preclude the implementation of a comprehensive medical surveillance program for health care workers who are exposed to hazardous drugs. In

Storage	<ul style="list-style-type: none"> ▪ Proper storage and handling of chemotherapeutic agents should be ensured by health care professionals in order to prevent accidental exposure. ▪ Chemotherapeutic agents should be stored in a designated area per the manufacturer's instructions, and separate from non-chemotherapeutic agents. ▪ Some agents are air-moisture, and/or light-sensitive; therefore, storage specifications should be followed.
Handling	<ul style="list-style-type: none"> ▪ Correct use of personal protective clothing and equipment should be instituted to minimize exposure and health risks. ▪ Disposable gloves should be used for dispensing. Hands must be washed before and after glove application. ▪ Limit additional handling of hazardous medications by other health care professionals. ▪ Health care professionals who store chemotherapeutic agents must have a written plan in the event of a spill or accidental exposure. It is recommended that annual spill simulation exercises be conducted.
Disposal	<ul style="list-style-type: none"> ▪ All disposable protective clothing and materials used while handling chemotherapeutic agents should be disposed according to the waste disposal guidelines. ▪ All non-disposable materials exposed to chemotherapeutic agents including trays, tools, surfaces, etc should be washed or decontaminated thoroughly after use.
Training	<ul style="list-style-type: none"> ▪ Health care professionals should attend orientation programs and routine training courses specific to their roles, and should complete competencies associated with these training programs. ▪ A primary educator within a health care institution should be established as a source of referral and continued education on chemotherapy for health care professionals, allowing for consistent education, training, and monitoring. ▪ Health care workers involved in the handling of chemotherapeutic agents should be trained and competent to treat individuals accidentally exposed to chemotherapeutic agents and on the disposal of chemotherapeutic agents. ▪ All clinical staff who are likely to come in contact with chemotherapeutic agents or with waste from patients who have received these agents (e.g. clerks, hygiene workers, and sanitation workers) should undergo appropriate training.

Table 6: Recommendations for Health Care Provider

the absence of an institutional medical surveillance program, workers are encouraged to inform their personal health care providers of their occupation and possible hazardous drug exposure when obtaining routine medical care (ASHP, 2006).

E. Research Support

Governments are responsible and have the authority to develop policies, guidelines, and to control work hazards by offering resources in order to prevent occupational health hazards. Also, the government is responsible for establishing a national health information center to provide

knowledge and information related to occupational health hazards to deal with chemotherapeutic drugs in different stages of handling.

Discussion

Many chemotherapeutic drugs and other hazardous agents used in the treatment of cancer patients pose a clear health danger to healthcare

1. Use gloves if possible and wash hands thoroughly before and after glove application.
2. Use separate devices for chemotherapeutic agents
3. Keep information ready for necessary action in the event of accidental exposure (including emesis and accidental ingestion).
4. Wash the patient's clothes and bed linen separately from other items
5. Double-flush the toilet after use, during use of and 4 to 7 days after discontinuing chemotherapy.
6. Do not leave medication in open areas, near sources of water, direct sunlight, or where they can be accessed by children
7. Do not store medications in the areas where food or drinks are stored or consumed
8. Do not discard medication down the toilet or in the garbage.

Table 7: Specific Recommendations for Patients and Caregivers

workers who deal in preparation and administration of these agents as well as the disposal of resulting waste products (Polovich, 2004; Gambrell, 2006). Adopting safe-handling practices, including the use of personal protective equipment, engineering controls, and other new systems for safely preparing and administering these agents, can help minimize the risk of exposure to workers involved in drug therapy (NIOSH, 2004).

Martens, and Suh-Priest (2007) reported that oncology nurses who are responsible for containment of spills during chemotherapy administration have knowledge deficits and the need for practice changes. It was found that the current chemotherapy policy was outdated and needed to be revised. There are too many proposed solutions that significantly reduce the risk of exposure to chemotherapy which include developing training and educational programs; establishing appropriate policies and working procedures; using available protection technologies and building solid base knowledge from related research. Ongoing training in the safety of handling hazardous materials is required for all involved personnel, which may reflect a job satisfaction that may prevent the causes of spillage problems.

The cost to the health services when implementing effective chemotherapy drug spill policy will decrease. Decision makers

must consider such costs as value adding not losing money. Healthcare institutions would have to consider the expense to comply with this policy because the cost of the consequences of chemotherapy spillage on employee is more (ILO, 2003; Giuffrida, Lunes, & Savedoff, 2002). There is a clear legal and ethical obligation on employers to anticipate and manage risk, and to provide safe working conditions and equipment for healthcare workers.

This paper only proposes brief of alternative ideas to reduce hazards of chemotherapy spill in the work place. Beyond the ethical considerations, there is a growing body of law that requires employers to combat risks at source. This paper may help and influence the development of further intervention strategies or further research to find alternative strategies for reducing such hazards of chemotherapy spill. Every healthcare institution must establish chemotherapy spill management policy and related procedures to protect the institution and their employers from health, economic and legal issues that may arise. Periodic evaluation of the chemotherapy spill policy may help in identifying the gaps that may lead to potential risks and help in preventing these hazards.

Implementation, Monitoring and Evaluation

The purpose of this policy analysis is to review and analyze the chemotherapy spill policy of the Islamic hospital and provide them

with information, and findings of the related policy analysis, which help for potential change. In the policy implementation phase, it is important to evaluate alternatives, and choose the best alternatives to attain the desired goals.

The recommendations are intended to be applied to all departments in Islamic hospital who are involved in handling chemotherapeutic agents and may be exposed to hazards through chemotherapy spillage. Islamic hospital stakeholders should have access to the proposed recommendations. I will disseminate the report to relevant stakeholders. Few changes need to be added or modified to guide practice and policy change.

Monitoring the effectiveness and consequences of the policy is required to consider how it is operating and whether it is achieving the desired results. Evaluation of policy seeks to relate and assess the connections between actual policies and changes in the areas they are supposed to be influencing. Islamic hospital and other health care institutions are highly concerned about developing and reviewing chemotherapy policies and procedures that may affect the health of employers.

Based on policy analysis process, the suggested plan will include the following actions: (1)

- Increase awareness and perception of the stakeholders

about the chemotherapy spill policy and procedure based on research through workshops, and disseminating of recommendations, (2)

- Recommend to designate a multidisciplinary committee of health professionals for assuring compliance with the chemotherapy spill policy and procedures (3)
- Raise the issue of legislation regarding chemotherapy to all concerned governmental and nongovernmental organization.

Recommendations

A number of stakeholders are involved in handling chemotherapeutic agents at various stages. Recommendations for safe handling by these stakeholders are outlined in the following sections.

1. Manufacturers and Distributors

There are well-defined regulations for manufacturers and distributors to ensure safe transport and handling of chemotherapy drugs, although the initial step for safe handling of chemotherapy agents begins with the manufacturer.

Appropriate packaging could minimize the handling of chemotherapy drugs by health care providers and patients, thus contributing to safer handling. This includes clear labeling on the outside of the package indicating that the agent is cytotoxic. Additional recommendations for manufacturers and distributors are listed in Table 5. Health care professionals are encouraged to reinforce the importance of these points to stakeholders and regulatory agencies whenever possible.

2. Health Care Providers

Health care providers have a major responsibility in ensuring safe handling of chemotherapeutic agents. Because of the significance of this responsibility, health care providers should be appropriately trained, ensure that their knowledge is current with developments in the field, and follow all applicable

discipline-specific guidelines when handling chemotherapeutic agents. See other recommendations in Table 6.

2. A. Training.

Health care professionals should attend orientation programs and routine training courses specific to their roles. They should also complete competencies associated with these training programs, along with an accompanying assessment for licensing qualification if applicable. The training programs should be approved by an oncology organization or appropriate local organizations.

In addition, within a health care institution, a primary educator should be established as a source of referral and continued education for training health care professionals on chemotherapy. This would ensure that patients receive consistent education, training, and monitoring across the multidisciplinary team.

Health care workers should be trained and competent to treat individuals accidentally exposed to chemotherapeutic agents and on the disposal of cytotoxic medications. All clinical staff who are likely to come in contact with oral chemotherapeutic agents or with waste from patients who have received these agents (e.g. clerks, hygiene workers, and sanitation workers) should undergo appropriate training. The latter point of training non-health care professional staff was important because this recommendation is not included in the Islamic hospital policy. A list of training recommendations for health care providers is shown in Table 6.

2 B. Storage and Handling.

When handling chemotherapeutic agents, health care providers must adhere to good practice as defined by procedures manual and policy. Key recommendations are outlined in Table 6.

Minimize or eliminate any role of pregnant staff in handling

chemotherapy agents. Clean non-disposable materials exposed to chemotherapy drugs. This includes trays, tools, and surfaces. Cleaning of the tools and surfaces exposed to these agents has been limited to washing the items and area thoroughly with soap and water, 70% alcohol, or sodium hypochlorite; in some settings, no cleaning occurs. The risk for contamination of other medications and patient exposure could be significant.

2 C. Patient Counseling

Health care professionals should provide patients and caregivers with education and training to ensure their understanding of safe handling procedures as well as thorough knowledge of proper administration of all medications. Patient literature and other educational materials should be monitored and evaluated to ensure that current and accurate information is being delivered. Clear dosing instructions should be provided, including what to do when a dose is skipped or when vomiting of a dose (spillage) occurs.

During refill of prescriptions, any potential medication and food interactions must be reassessed and discussed with the patient or caregiver. The patient should be made aware of the required monitoring arrangements by being provided with access to the written protocol and treatment plan from the institution where the treatment was initiated. Patients who are pregnant or breast-feeding should be counseled on recommended medications and their risk-benefit profiles.

3. Patients and Caregivers

Recommendations for patients and caregivers are included in Table 7. Caregivers should understand all information given to patients, including the transport, storage, dispensing, and disposal requirements to ensure safe handling.

They must work with the patient and health care provider to ensure

appropriate dosing for patients in their care and report any treatment-related adverse effects. Caregivers who are pregnant or breast-feeding, or children, should not handle any chemotherapy agents or waste products. Finally, to further ensure the safety of these individuals and others in the patient's home, guidelines from Australia and Canada recommend that patient's clothes and bed linen be handled with gloves and washed separately from other items and that toilets be double-flushed after use, during and four to seven days after discontinuing chemotherapy. Because drugs may be eliminated from the body as active or inactive metabolites in sweat, saliva, urine, or stool for five to seven half-lives, these recommendations were important and should be implemented.

These recommendations are adopted from the American Society of Health Systems Pharmacists: ASHP guidelines on handling hazardous drugs, 2010.

Conclusion

A lot of health care professionals and workers are exposed to hazardous agents on a daily base, and many of them seriously injured. Several measures and efforts can be done to reduce such risks factors that lead to such hazards. In this paper, I identified gaps in existing policy for the safe handling of spilled chemotherapy agents. This paper only proposes some alternative ideas to enhance and eliminate the factors that influence the reduction of chemotherapy spill. First, the proposed recommendations are relevant to multiple stakeholders, beginning with the manufacturer. In addition, this recommendation has been developed based on international policy and best practices, and compiled to fill the gaps in existing policy. Therefore, these recommendations may help health care institutions to change or reshape their chemotherapy spill policy to maintain safe handling of chemotherapy to health workers and practices.

All stakeholders should follow established guidelines when handling chemotherapeutic agents and continually review and assess their standards and compliance with agreed procedures. This paper may influence the development of further intervention strategies or further research to find alternative strategies for reducing spillages of chemotherapeutic agents that are aimed to prevent, or at least reduce, the occupational hazards in the future. In addition, all facilities that handle chemotherapy agents should evaluate the policy and practice annually or as necessary. The major implementation strategies are to enhance training efforts, modify standardization and support related research, and sharing recommendations at national level and improving the quality of the medical industry related to handling chemotherapeutic agents, as well as in the work place, is important.

References

- Aisner, J. (2007). Overview of the changing paradigm in cancer treatment: Oral chemotherapy. *American Journal Health System Pharm.* 64 (5), 4-7
- American Society of Health-System Pharmacists. (2010). ASHP guidelines on handling hazardous drugs. *American Journal of Health-System Pharmacy*, 63, 1172-1193
- American Society of Hospital Pharmacists (ASHP, 1990). Technical assistance bulletin on handling cytotoxic and hazardous drugs. *American Journal of Hospital Pharmacists*, 47:1033-1049.
- Amiruddin, A. (2002). Managing cytotoxic drugs. *Malaysian Journal of Pharm.*1(3),63-68
- Brown, K.A., Esper, P., Kelleher, L.O., O'Neill, J.E.B., Polovich, M., & White, J.M. (2001). Chemotherapy and biotherapy guidelines and recommendations for practice. Pittsburgh, PA: Oncology Nursing Society.
- CNSA. (2003). Position statement on the minimum education and safety requirements for RNs involved in the administration of cytotoxic drugs, p.1. Retrieved November 2012, from http://www.cnsa.org.au/publications_policies_pub.htm
- Connor, T., McDiarmid, M. (2006). Preventing occupational exposures to antineoplastic drugs in health care settings. *CA Cancer J Clin*,56, 354-356.
- Erinn, C., Rowe, M.S., Scott, W., Savage, M.S., William, A., Rutala, M. (2012). Economic and microbiologic evaluation of single-dose vial extension for hazardous drugs. *American Society of Clinical Oncology*, vol. 12
- Fransman, W., Roeleeld, N., Peelen, S., deKort, W., Kromhout, H., Heederik, D (2007). Nurses with dermal exposure to antineoplastic drugs: Reproductive Outcomes. *Epidemiology*, 18 (1), 112-119.
- Giuffrida, A., Lunes, R.F. & Savedoff, W.D. (2002). Occupational risks in Latin America & the Caribbean: Economic & Health Dimension. *Health Policy & Planning* 17 (3): 235-246
- Griffin, E. (2003). Safety considerations and safe handling of oral chemotherapy agents. *Clin J Oncol Nurs*,7, (6), 25-29
- GMCCN, (2009). Policy & Procedure for the management of cytotoxic chemotherapy Spillage policy. Retrieved on 20/11/2012 from www.gmccn.nhs.uk/Spillage Policy.
- International Labour Organization, (2003). ILO standards-related activities in the area of occupational safety and health: Report VI retrieved on 20/11/2012 from <http://www.ilo.org/public/english/standards/relm/ilc/ilc91/pdf/rep-vi.pdf>
- Kyprianou, M., Kapsou, M., Raftopoulos, V., & Soteriades, E.S. (2010). Knowledge, attitudes and beliefs of Cypriot nurses on the handling of antineoplastic agents. *European Journal of Oncology Nursing*, 14, 278-282
- Landrigan, C.P., Rothschild, J.M., Cronin, J.W., Kaushal, R., Burdick, E., Katz, J.T. et al. (2004). Effect of reducing interns' Work hours on serious medical errors in intensive care units. *The New England Journal of Medicine*, 28

- Martens, J. & Suh-Priest, C. (2007). The safe handling of chemotherapy. *Oncology Nursing Forum*, 34, (2), 532
- Martin, S. (2003). Chemotherapy handling and effects among nurses and their offspring. Columbia University, New York, NY.
- Martin, S. (2005). Chemotherapy handling and effects among nurses and their offspring . *Oncology Nursing Forum*, 32, 425.
- Mason, H., Morton, J., Garfitt, S., Iqbal, S., Jones, K. (2003). Cytotoxic Drug Contamination on the Outside of Vials Delivered to a Hospital Pharmacy. *Annals of Occupational Hygiene*, 47 (8), 681-685.
- National Institute for Occupational Safety and Health (NIOSH, 2004). Preventing occupational exposure to anti-neoplastic and other hazardous drugs in health care settings. Retrieved November 2012 from www.cdc.gov/niosh/docs/2004-165/
- National Institute of Occupational Safety and Health (NIOSH, 2007). Occupational exposure to antineoplastic agent, Retrieved November 19, 2012, from (<http://www.ecd.gov/niosh/topics/antineoplastic/default.html>)
- Polovich, M. (2004). Safe handling of hazardous drugs. *Online Journal of Issues in Nursing*. 9, (3), 5.
- Rogers, B. (2012). Occupational and Environmental Health Nursing: Ethics and Professionalism. *Workplace Health & Safety Journal*, 60 ,(4), 177-181
- Smith, C. (2012). Oncology nurses get cancer from handing chemo drugs. Retrieved on 15/12/2012 from http://seattletimes.com/html/localnews/2012327665_chemo11.html
- Thomas, H. (2006). Preventing occupational exposures to antineoplastic drugs in health care settings. *CA Cancer journal for clinicians*, 56, 354-365
- Valanis, B. G., Vollmer, W. M., Labuhn, K. T., Glass, A. G. (1993). Association of antineoplastic drug handling with acute adverse effects in pharmacy personnel. *American Journal Hosp Pharm*, 50, 455-462.
- Weingart, S., Brown, E., Bach, P., & et al (2008). NCCN Task Force Report: Oral chemotherapy. *Journal of National Cancer Network*. 6, (3), 1-14.
- Wick, C., Slawson, M.H., Jorgenson, J.A., Tyler, L.S. (2003). Using a closed-system protective device to reduce personnel exposure to antineoplastic agents. *Am J Health Syst Pharm*, 60, 2314-2320.
- World Health Organization (WHO, 2012). Cancer control: knowledge into action. Retrieved on 20/11/2012 from <http://www.who.int/cancer/modules/en/index.html>

HEALTH RELATED QUALITY OF LIFE AMONG ADOLESCENTS SURVIVING CANCER: A REVIEW

G Ala'a A. Al-Rashideh (1)
Nijmeh Al-Atiyyat (2)

(1) Ala'a A. Al-Rashideh, MSN, RN
Hashemite University, School of Nursing, Zarqa, Jordan
(2) Nijmeh Al-Atiyyat, PhD, RN
Hashemite University, School of Nursing, Zarqa, Jordan

Correspondence

Ala'a A. Al-Rashideh

Email: a_rashideh@yahoo.com

Nijmeh Al-Atiyyat

Email: nejme21@hotmail.com

Introduction

Health related quality of life is a subset of quality of life representing satisfaction in areas of life affected by health status (Peterson & Bredow, 2009). It is a subjective, multidimensional and dynamic concept (Albert et al., 2002; Revicki et al., 2000; Sajid, Tonsi, Baig, 2008).

HRQOL has significance in oncology nursing practice, as it is an indicator of the effectiveness of nursing interventions (Salonen et al., 2009). Also measurement of HRQOL helps in planning care (Sloan et al., 2006), improves communication (Detmar et al., 2002), improves patient satisfaction, finds hidden morbidities and aids in clinical decision-making (Varni et al., 2005).

Adolescence is the period of life characterized by significant physical and emotional changes. The emphasis during this period is on autonomy, independence, sexuality, and peer relationships. So diagnosis of cancer during adolescence has major impact on their psychological and physical development (Abrams, Hazen, Penson, 2007).

Despite several studies conducted to investigate HRQOL among adolescents surviving cancer, there is still a contradictory result about the impact of some variables on HRQOL, particularly the impact of ethnicity and socioeconomic status on HRQOL among adolescents surviving cancer (Eilertsen, Jozefiak, Rannestad, Indredavik, Vik, 2012; Meeske, Patel, Palmer, Nelson, Parow, 2007; Wu et al., Bhatia, 2007). The aim of this integrative literature review is to evaluate HRQOL among adolescents surviving cancer.

Abstract

The aim of this integrative literature review is to evaluate health related quality of life among adolescents surviving cancer. A literature search of studies published between 2007 and 2012 was conducted using the databases of Pubmed, Science Direct and SpringerLink. The articles were included if they were a research study, included the population of adolescents surviving cancer, if they investigated the health related quality of life and were published in the English language. A total of seven articles met the inclusion criteria. The reviewed articles show that adolescents surviving cancer have a good overall Health Related Quality of Life (HRQOL) compared with their peers. Poor HRQOL is associated with female gender, brain tumor, fatigue, and late effects. Recommendations are for practices to routinely assess HRQOL among adolescents surviving cancer especially for those with high risk for poor

HRQOL. Recommendations for researchers are to investigate the impact of ethnicity and socioeconomic status on HRQOL among adolescents surviving cancer.

Keywords: "adolescence cancer", "health related quality of life", "cancer survivors".

Theoretical Framework

This integrative literature review will be guided by Spilker's model. Spilker (1996) illustrates the HRQOL as a pyramid of three levels. The top level is the overall assessment of well-being. The middle level contains broad domains (i.e., physical, psychological, spiritual, social, economic). The basis of the pyramid is the components of each domain (Spilker et al., 1996).

Methodology

A literature search of studies published between 2007 and 2012 was conducted using the databases of Pubmed, Science Direct and SpringerLink. The keywords "adolescence cancer", "health related quality of life", and "cancer survivors" were used to search articles. The articles were included if they were a research study, included the population of adolescents surviving cancer, investigated the health related quality of life and were published in English language.

Thirty articles were reviewed for possible inclusion. Only seven articles met the inclusion criteria. All the articles are quantitative articles with correlational design.

Findings

The most frequently studied domains are: physical, emotional, school and social domains.

Physical Functioning

There are controversial results regarding physical functioning. Some studies revealed that adolescents surviving cancer assessed their physical functioning, similar to healthy controls (Dijk et al., 2007; Eilertsen et al., 2012; Meeske et al., 2007; Wu et al., 2007). Other studies concluded that adolescents surviving cancer had significant lower physical functioning subscale compared with healthy controls (Kupeli, Akyuz, Buyukpamukcu, 2011; Servitzoglou, Papadatou, Tsiantis, Kosmidis, 2009).

Variables associated with poor physical functioning are female gender; females surviving cancer had reported significant lower physical functioning compared with males surviving cancer. Also adolescents surviving brain tumors had significant lower physical functioning compared with adolescents surviving other cancers. Other variables associated with poor physical functioning are fatigue and severe late effects. In detail, adolescents who reported fatigue or severe late effects had significant lower physical functioning compared with adolescents surviving cancer without fatigue or severe late effects. In addition non-white race is associated with significant lower physical functioning compared with white race survivors (Eilertsen et al., 2012; Kupeli et al., 2011; Meeske et al., 2007; Servitzoglou et al., 2007; Wu et al., 2007).

Parent's educational level is also associated with adolescent's physical functioning; adolescents whose parents are university graduates had significant better physical functioning score than adolescents whose parents are primary school graduates (Kupeli et al., 2011).

Emotional Functioning

All reviewed articles show that emotional functioning score among adolescents surviving cancer did not significantly differ from emotional functioning among healthy controls (Dijk et al., 2007; Eilertsen et al., 2012; Kupeli et al., 2011; Mort, Salantera, Matomaki, Salmi, Lahteenmaki, 2011; Meeske et al., 2007; Servitzoglou et al., 2007; Wu et al., 2007).

Although adolescents surviving cancer have good emotional functioning, several studies identify risk variables for poor emotional functioning. These variables are Hispanic race; emotional functioning scores were significantly lower for Hispanic survivors compared with non-Hispanic survivors. Also females surviving cancer

had significant lower emotional functioning compared with males surviving cancer. Fatigued survivors had significant lower emotional functioning compared with non-fatigued survivors. Kupeli and his team found that adolescents surviving brain tumors had significant lower emotional functioning compared with adolescents surviving Hodgkin and non-Hodgkin lymphoma (Kupeli et al., 2011; Meeske et al., 2007; Wu et al., 2007).

School/Cognitive Functioning

Several studies reveal that adolescents surviving cancer had good school functioning compared with healthy controls (Dijk et al., 2007; Eilertsen et al., 2012; Meeske et al., 2007; Mort et al., 2011; Wu et al., 2007) but Kupeli and his team found that adolescents surviving cancer had a significant lower score in school function compared with healthy controls (Kupeli et al., 2011).

Poor school functioning is associated with Hispanic race, as Hispanic survivors had lower school functioning compared with Caucasian survivors. Brain tumor survivors had significant lower school functioning compared with other cancer survivors. Also adolescents treated with radiotherapy reported poor school functioning compared with survivors not treated with radiotherapy. In addition, female survivors reported significant lower school functioning compared with female controls (Kupeli et al., 2011; Meeke et al., 2007; Wu et al., 2007).

Social Functioning

The majority of reviewed articles conclude that adolescents had good social functioning compared with healthy controls (Dijk et al., 2007; Eilertsen et al., 2012; Kupeli et al., 2011; Mort et al., 2011; Meeske et al., 2007; Wu et al., 2007), except Servitzoglou and her team who found that teenagers had significant lower social functioning compared with healthy controls (Servitzoglou et al., 2007).

Researchers have been identify risk variables for poor social functioning, which are brain tumor survivors compared with other cancer survivors, fatigued survivors compared with non-fatigued survivors, and female survivors compared with female controls (Meeske et al., 2007; Wu et al., 2007).

The Overall Health Related Quality of Life

All reviewed articles conclude that there is no significant difference in overall HRQOL score between adolescents surviving cancer and the healthy controls. Variables affecting the overall HRQOL are female gender, brain tumor, fatigue, and late effects (Dijk et al., 2007; Eilertsen et al., 2012; Kupeli et al., 2011; Mort et al., 2011; Meeske et al., 2007; Servitzoglou et al., 2007; Wu et al., 2007).

Conclusion

Adolescents surviving cancer have a good HRQOL compared with their peers. Poor overall HRQOL is associated with female gender, brain tumor, fatigue, and late effects. Recommendations are for practice to routinely assess HRQOL among adolescents surviving cancer especially for those with high risk for poor HRQOL. Recommendations are for researchers to investigate the impact of ethnicity and socioeconomic status on HRQOL among adolescents surviving cancer.

References

- Abrams, A., Hazen, E., Penson, R.(2007). Psychosocial issues in adolescent with cancer. *Cancer Treatment Reviews*, 33, 622-630.
- Albert, U.S., Kdler, M., Lorenz, W., Kopp, I., Heitmann, C., Stinner, B., Rothmund, M., Schulz, K.D. (2002). Quality of life profile: from measurement to clinical application. *The Breast*, 11, 324-334.
- Detmar, S.B., Muller, M.J., Schornagel, J.H., Wever, L., Aaronson, N. (2002) Health related quality-of-life assessments and patient-physician communication: a randomized controlled trial. *Journal of American Medical Association*, 288, 3027-3034.
- Dijk, Huisman, Moll, Meeteren, Bezemer, Ringens, Kettenis, Imof. (2007). Health related quality of life of child and adolescent retinoblastoma survivors in the Netherlands. *Health and Quality of Life Outcomes*.5, 65.
- Eilertsen, M., Jozefiak, T., Rannestad, T., Indredavik, M. (2012). Quality of life in children and adolescents surviving cancer. *European Journal of Oncology Nursing*,16:185-193.
- Kupeli, B., Akyuz, C., Buyukpamukcu, M.(2012). Health related quality of life in pediatric cancer survivors: A multifactorial assessment including parental *Pediatric Hematological Oncology*, 34:194-1.
- Meeske, K., Patel, S., Palmer, S., Nelson, M., Parow, A. (2007). Factors associated with health related quality of life in pediatric cancer survivors. *Pediatr Blood Cancer*, 49:298-305.
- Mort, S., Salantera, S., Matomaki, J., Salmi, T., Lahteenmaki, P. (2011). Self-reported health-related quality of life of children and adolescent survivors of extracranial childhood malignancies. *Journal Quality of Life Research*. 20, 787-797.
- Peterson, S., Bredow, T. (2009). *Middle range theories*. Wolters Kluwer Health Publisher
- Revicki D. A., Osoba, D., Fairclough, D., Barofsky, F., Berzon, R., Leidy, N. K., Rothman, M. (2000). Recommendations of HRQOL research to support labeling and promotional claims in united state. *Quality of Life Research*, 9, 887-900
- Sajid, M., Tonsi, A., & Baig, M. (2008). Health-related quality of life measurement. *International Journal of Health Care Quality Assurance*, 21(4), 365-373.
- Salonen, P., Tarkka, M.T., Kellokumpu-Lehtinen, P.L., Kurki, P., Luukkaal, T., Kaunonen, M. (2009). Telephone intervention and quality of life in patients with breast cancer. *Cancer Nursing*, 32:177-190.
- Servitzoglou, M., Papadatou, D., Tsiantis, L., Kosmidis, H.(2009). Quality of life of adolescent and young adult survivors of childhood cancer. *Journal of Pediatric Nursing*, 24:415-420
- Spilker, B. (1996). *Quality of life and pharmaco economics in clinical trials*. New York: Lippincott-Raven.
- Varni, J., Burwinkle, T., Lane, M. (2005). Health-related QOL measurement in pediatric clinical practice: an appraisal and precept for future research. *Health and Quality of Life Outcomes*. 3, 34.
- Wu, E., Robisom, L., Jenney, M., Rockwood, T., Feuner, J., Fridman, D., Kane, R., Bhatia, S. (2007). Assessment of health-related quality of life of adolescent cancer patients using the Minneapolis-Manchester quality of life adolescent questionnaire. *Journal of Pediatric Blood Cancer*, 48, 678-686.

DETERMINANTS OF CURRENT CONTRACEPTION USE AMONG THE EVER-MARRIED FEMALES IN RAJSHAHI DISTRICT OF BANGLADESH

Jahirul Islam (1)
Shahin Reza (2)

(1) Md. Jahirul Islam
Ministry of Health and Family Welfare, Bangladesh Secretariat,
Dhaka-1000, Bangladesh.

(2) Md. Shahin Reza
Department of Population Science and Human Resource Development,
University of Rajshahi, Rajshahi-6205, Bangladesh.

Correspondence

Md. Jahirul Islam
Assistant Chief (Family Welfare-3 Section)
Ministry of Health and Family Welfare
Bangladesh Secretariat, Dhaka-1000, Bangladesh
Email: mdjahirul@yahoo.com

Introduction

Any deliberate practice to reduce the risk of conception is considered as contraception. Contraceptive use is the most frequent proximate determinant of age at first birth and fertility. Contraception can delay the first birth and reduce fertility by either spacing or limiting births. Therefore, it is necessary to understand the levels and determinants of contraceptive use in order to formulate policies supporting proper strategies for raising contraceptive prevalence.

Contraceptive use is one of the crucial factors mediating between sexual activities and conception and it is one of the oldest methods of fertility reduction. The use of contraceptives is the most important factor that directly affects fertility. Rising use of contraception is undoubtedly the main proximate determinants of the ongoing fertility decline in developing countries like Bangladesh (Bongaarts, J 1991). Since independence, contraceptive prevalence has steadily grown in Bangladesh. Contraceptive Surveys conducted at the national level indicate a rising trend in the contraceptive prevalence rate.

Between 1975 and 1999-2000, current use of contraceptive methods has increased from 7.7% in 1975 to 53.8% in 1999-2000 (BDHS, 1999-2000).

Several authors have argued that Bangladeshi couples are not likely to adopt contraception until they experience improvements in their socio-economic condition (Khuda, B.J. Stoeckel and N. Piet-Pelon, 1997). Social and economic development as well as more widely diffused family planning services will contribute to a higher level of contraceptive use. Various studies indicate that current use of contraceptives and acceptance of small family norm depends on a

Abstract

The aim of this paper is to investigate the determinants of current contraception use of the ever-married females. Using the information from 2000 ever married women of Rajshahi district, within the reproductive span (15-49 years), we found that among the factors determining contraceptive use among women, education appears to be the most significant; education is positively associated with contraceptive use. The region of residence, occupation of husband and bank account ownership, visits of family planning workers and talking to husbands about family planning also appear to be significant factors determining the level of contraceptive use among the women. Again, we found that, number of living children to a woman is also associated with the use of contraception. The result shows that women who have no living children are less likely to use any method. This study also envisages that, most women, both in rural

and urban areas use modern methods more frequently than traditional methods. This study intends to examine the current use of contraception and helps in understanding the influences of various socio-demographic factors in raising the current use of contraception in Rajshahi district.

Key words and Phrases:
Contraception, Fertility preference, Rajshahi District, Logistic regression analysis

number of factors like education, place of residence, occupation and so on (Coutris, S.; Ullah and Chakraborty, 1993). Ross and E. Frankenberg (1993) observed that effort of family planning programs and socioeconomic conditions exert both independent and joint effects on family size. For instance, educational attainment of the woman is generally considered to be a useful index of socioeconomic status as well as of the level of overall social sophistication and therefore, it is inversely related to the desire for additional children and positively related to the use of contraception. Similarly, mobility of women outside the home creates opportunity to the improvement of women and increases the social status of poor women and consequently their attitude towards family planning as well as contraceptive use (Duza and M.Nag, 1993).

In addition, high infant and child mortality is also an important determinant of contraceptive use in Bangladesh. At least one out of ten children dies before completing the first birth anniversary. Child survival appears to play a major role in the acceptance and continuation of contraception (Mauldin W.P and S.J Segal, 1988). In this chapter, we have identified the factors influencing the current use of contraception during fertility transition in Bangladesh.

The determinants of contraceptive use are important in any effort to reduce fertility within a country. Caldwell and Caldwell (1987) pointed out that the path of fertility will be determined by the extent to which contraception substitutes abstinence, and ultimately by the extent to which it is more efficient than periodical abstinence as a means of fertility regulation.

Several studies have been carried out to investigate factors influencing the use of contraceptives. In Bangladesh such studies include that of Shahid and Chakraborty (1989), who used multivariate logistic regression technique to examine 15

socio-economic and demographic variables and assessed their relative importance in relation to contraceptive use. In another study, Kabir (1990) used the Bangladesh Fertility Survey in 1989 and the Bangladesh Demographic and Health Surveys (BDHS) during 1993-94 and 1996-97 to investigate the determinants of contraceptive use among the currently married women under 50 years of age. Bi-variate analyses were used to assess the differentials and multivariate analysis used to find the determinants of the current contraceptive use.

The major focus of the following sections is the examination of the extent of contraceptive use. This chapter examines the individual-level factors related to contraceptive use only.

Data Collection and Methodology

Data

The data was collected from a field survey conducted in the district of Rajshahi of Bangladesh under the project of UNFPA entitled "Strengthening the Department of Population Science and Human Resource Development". These data were collected from both rural and urban areas of Rajshahi district. Information was collected from 2000 ever-married women by interview method. Respondents were selected by purposive sampling method. For rural areas we had selected Baksimoil union of Mohanpur thana and for urban areas we have selected 3 wards of Rajshahi Metropolitan city corporation.

Methodology

Percentage distribution and the average value are used to investigate the overview picture of the respondents for some selected socio-demographic characteristics.

Data analytic method envisaged in this paper is percentage distribution and logistic regression analysis. In logistic regression, just as linear regression, the codes for the

independent variables must be meaningful. We must decode the values of the independent variables by creating a new set of variables that correspond, in some way, to the original categories. When we have a variance with more than two categories, we must create a new variable to represent the categories. The number of new variables required to represent a categorical variable is one less than the number of categories. For example, if instead of the actual values for education of the respondents, we had values of 0, 1 depending on whether the value was 'no education', and 'some education'. The value 'no education' would be represented by codes of 0 and it is called reference category. If we use indicator variables for coding, the coefficient for the new variables represent the effect of each category compared to a reference category. The coefficient for 'some education' is the change in log odds when the lower primary is compared to no education. The coefficients for no education are necessarily zero, since it does not differ from itself. The logistic regression procedure will automatically create new variables for categorical variables.

Current Use of Contraception

Women, at the time of the interview, were asked if they were currently doing something or using a method to delay or to avoid getting pregnant. This information is very useful as a measure of one of the proximate determinants of fertility as well as a measure of the coverage of family planning programmes (Bertrand et al., 1993). We computed contraceptive prevalence (the percentage of all married women currently using some type of contraception) according to their background characteristics. The percentages of results are presented in Table 1. The table shows that 69.4 percent of the married women were using contraception at the time of the interview.

Table 1 reveals that women residing in urban areas have a contraceptive prevalence of about 3.0 percentage

<i>Characteristics</i>	<i>No. of cases</i>	<i>Percentage currently using contraception</i>
All (15-49)	2000	1388 (69.4)
Place of residence		
Urban	1000	708 (70.8)
Rural	1000	680 (68.0)
Education of wife		
No education	373	234 (62.7)
Primary incomplete	233	151 (64.8)
Primary complete	347	240 (69.2)
Secondary and higher	1047	763 (72.9)
Education of husband		
No education	366	237 (64.8)
Primary incomplete	169	117 (69.2)
Primary complete	317	217 (68.5)
Secondary and higher	1148	817 (71.2)
Religion		
Muslims	1944	1346 (69.2)
Non-Muslims	56	42 (75.0)
Electricity in the household		
Yes	1559	1105 (70.9)
No	441	283 (64.2)
Bank account ownership		
Yes	396	302 (76.3)
No	1604	1086 (67.7)
Age at first birth		
<18	1015	726 (71.5)
18-19	178	128 (71.9)
20-21	306	229 (74.8)
22-24	191	142 (74.3)
25+	134	87 (64.9)
Age at first marriage		
<18	1571	1080 (69.2)
18-19	85	60 (70.5)
20-21	156	113 (72.4)
22-24	101	74 (73.2)
25+	87	54 (62.1)

Table 1: Percentage distribution of women currently using contraceptive methods by selected background variables (Part 1)

Characteristics	No. of cases	Percentage currently using contraception
Current age		
15-19	150	85 (56.7)
20-24	361	248 (68.7)
25-29	425	299 (70.4)
30-34	416	302 (72.6)
35-39	337	237 (70.3)
40-44	204	150 (73.5)
45-49	107	67 (62.6)
Respondent's occupation		
Worked	155	115 (74.2)
Did not work	1845	1273 (68.9)
Husband's occupation		
Not manual	876	627 (71.5)
Manual	1124	761 (67.7)
Visits of family planning worker		
Regularly	1014	750 (73.9)
Irregularly	986	638 (64.7)
Discussion with husbands		
Yes	1318	958 (72.3)
No	672	430 (63.9)
Children ever born		
0	176	76 (43.2)
1	546	400 (73.3)
2	661	481 (72.8)
3+	617	431 (69.9)
Children surviving		
0	182	82 (45.1)
1	578	418 (72.3)
2	675	496 (73.5)
3+	565	392 (69.4)
Children dead		
0	1848	1281 (69.3)
1	125	91 (72.8)
2	21	11 (52.4)
3+	6	5 (83.3)

(Value in the parenthesis represents percentage)

Table 1: Percentage distribution of women currently using contraceptive methods by selected background variables (Part 2)

points higher than those residing in rural areas. The highest prevalence is observed for women who had their first birth and marriage above the age of 18. It is also interesting to note that women who had their first marriage and birth below the age of 18 years have a low percentage of contraceptive use. However, this might reflect the interaction between early child bearing and no usage of contraception as low contraceptive prevalence leads to earlier birth.

Let us take a look at women's educational level, which is cited as the most important variable associated with contraceptive use in many countries. It has been observed that better educated women are more likely to use contraception (Rutenberg, N., M. Ayad, L.H. Ochoa, and M. Wilkinson (1999)). The percentage of women using contraception increases consistently with the level of education. The gap between users who attended at least secondary school and those who never attended any type of schooling is enormous (10.2 percentage points). This is somehow also true when the education of their life partners is considered.

Religious differentials in contraceptive use have been confirmed in many societies. With regard to religion, Non-Muslims

(75.0 percent) have higher contraceptive use than Muslim women (69.2 percent). In Muslim culture, people believe that God has control over the human reproductive system or that children are a gift from God. Therefore, they should not prevent a child from coming into the world (Omari,1989). Most women with Islamic faiths are likely to advocate this ideology.

It is observed that women who have electricity in their house tend to have higher contraceptive use rate than those who reported no electricity in their house. This may be due to the fact that electricity is itself an indicator of modernization and may be useful for motivating and familiarization of wives and husbands about the current use of contraception. It is also observed from Table 1 that current use rate is higher among women who have bank account ownership (76.3 percent) than those who did not have bank account ownership (67.7 percent). This may due to the fact that women having bank accounts are more aware.

Contraceptive use is higher among women aged 40-44 years than among women either younger or older than that. Figure 1 presents the contraceptive prevalence by five-year age groups of women. Contraceptive prevalence is lowest

for the age group 15-19, increases gradually to reach a maximum at the age group 40-44, after which it decreases consistently to the age group 45-49. The reason of such findings may be due to the fact that younger women are seeking children but the women with edged reproductive span (40-44) might have their desired number of children. Thereafter, some women in the age group 45-49 might have faced menopause and so the contraception-using rate is decreased dramatically.

Contraceptive use rate increase with visits of family planning workers, indicating a positive relationship between family planning workers' visits to the couple's house and contraceptive use. The use rate is considerable higher (about 73.9 percent) for those respondents where family-planning workers visit their homes regularly. Again among the women who have discussed family planning with their husbands are more likely to use contraception.

Working status of women is often considered to be a determining factor of contraceptive use. The result demonstrates that working women are more likely to currently use contraception compared to those who do not. The obtained results divulge that the contraceptive use rate is the highest among those

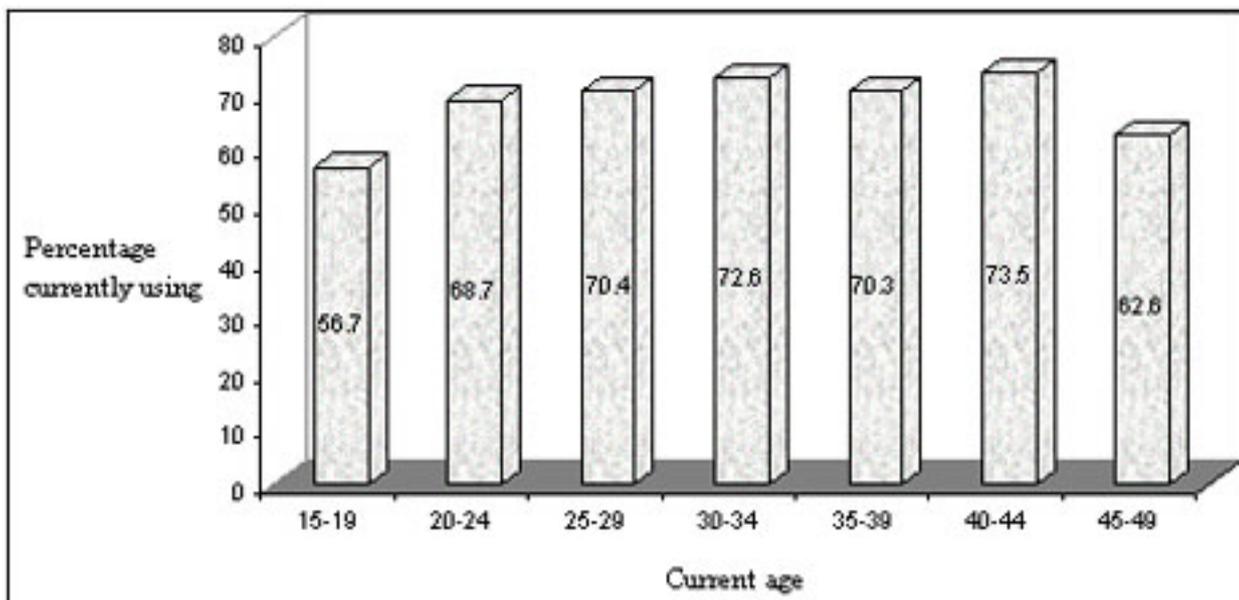


Figure 1: Percentage distribution of women currently using contraception by current age.

whose husbands are not manual workers (Serviceman, businesses man, and others).

Finally, it is important to examine the association between the number of surviving children to a woman and contraceptive use. The number of living children to a woman has been found to be associated with the use of contraception (Rutenberg et al., 1991; Robey et al., 1992). The result shows that women who have no living children are less likely to use any method. The use rate increases to a maximum of 73.5 percent for those women with 2 living children and then declined to 72.3 percent for those having 1 living child.

Contraceptive Method Mix

It is important to examine the specific contraceptive methods used, since different methods have different implications for family planning programmes. Table 2

presents the percentage distribution of women using contraception at the time of the interview according to the method they used and their place of residence. It seems that most women both in rural and urban areas use modern methods more frequently than traditional methods. According to this table 62.7 percent women use modern methods and an additional 6.8 percent used traditional methods, for a total of 69.4 percent of women who used any contraceptive methods. Notably, use of traditional methods is higher in urban areas (7.8 percent) than in rural areas (5.7 percent). Urban contraceptive use exceeds rural use, with 70.8 percent of urban women using contraception compared to 68.0 percent of rural women. Contraceptive use is almost 3.0 percentage points higher in urban areas than in rural areas.

The pill is the most popular method for women in urban areas (37.6 percent) followed by condoms

(20.4 percent). For women in rural areas all three methods i.e. pill (37.8 percent), condom (14.4 percent) and injection (6.1 percent) are popular. In general, the pill is the most popular followed by condoms. Several factors may account for the demanding popularity of the pill; the single most significant benefit of the pill is its almost 100 percent effectiveness in preventing pregnancy and thereby removing anxiety about the risk of unplanned pregnancy. Apart from this, the pill has a number of non-contraceptive benefits and is quite easy to obtain.

Injectable contraceptives are popular in rural areas due to the fact that they can be used without the agreement of the husband or partner. Many men in rural areas do not want their sexual partner to use any contraceptives methods. Men would like many children as a future labor force or future social security.

<i>Contraceptive method</i>	<i>All</i>	<i>Residence</i>	
		<i>Urban</i>	<i>Rural</i>
Any modern method use	1253 (62.7)	630 (63.0)	623 (62.3)
Pill	754 (37.7)	376 (37.6)	378 (37.8)
Condom	348 (17.4)	204 (20.4)	144 (14.4)
Injectable	102 (5.1)	41 (4.1)	61 (6.1)
IUD	38 (1.9)	6 (0.6)	32 (3.2)
Vasectomy/ Tubectomy	11 (0.6)	3 (0.3)	8 (0.8)
Any traditional method	135 (6.8)	78 (7.8)	57(5.7)
Safe period	38 (1.9)	22 (2.2)	16 (1.6)
Withdrawal	9 (0.5)	6 (0.6)	3 (0.3)
Other	88 (4.4)	50 (5.0)	38 (3.8)
Any method	1388 (69.4)	708 (70.9)	680 (68.0)
No method	612 (30.6)	292 (29.2)	320 (32.0)
Total	100.0	100.0	100.0
N	2000	1000	1000

(Value with parenthesis represents percentage)

Table 2: Percentage distribution of women currently using a contraceptive method according to the methods used and their place of residence

Contraceptive Use in Relation to Self-reputed Need

In this section, fertility preferences and contraceptive use are discussed jointly to analyze contraception in relation to need, namely the desire among women to avoid future childbearing altogether.

Table 3 shows the relationship between contraceptive use and self-reported desire to limit family size. The entire analysis is done for those women who have at least one surviving child. Among the women, who said they wanted no more children, only 75.3 per cent were practicing contraception. This compares to a figure of 69.5 per cent for those who said they wanted another child at some time in the future. Thus, "limiters" and "spacers" were found to be quite close to contraceptives users.

Multivariate Analysis of the Determinants of Current Contraceptive Use

Binary logistic regression is the multivariate analysis technique used to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables. It is similar to linear regression model but is suited to models where the dependent variables are dichotomous. In this section, logistic regression will be used to examine the relative importance of the determinants of contraceptive use. The response variable is used or non-use of contraceptives at the time of the survey. Table 1 describes the data used for the multivariate analysis.

Results of Logistic Regression Analysis

Table 4 (next 2 pages) presents the model for the determinants of current contraceptive use for women. Nine variables were found to influence the use of contraceptives significantly. The analysis indicates that women's education is the strongest predictor of the use of contraceptives. Women with 'incomplete primary' education were 1.03 times more likely to use contraceptives than women who had no education. The likelihood of using contraceptives increases further as the educational level increases beyond 'lower primary'. Women who had at least secondary and higher education, were 2.13 times more likely to use contraceptives than women without education. It is interesting to note that the education of a woman's partner has also impact independently of her own educational level. The direction of this effect is the same, although the odds ratio is weaker. The fact that both the education of women and of their partners was significant indicates that these two variables have separate effects in determining contraceptive use. The prevalence of contraception depends to a large extent on the type of the place of residence. Women residing in rural areas are 0.79 times less likely to use contraception than their counterparts residing in urban areas.

Non-Muslim women are 1.36 times more likely to use contraceptives than Muslim women. It seems that those respondents who have electricity in their house were 1.20 times more likely to use contraception than those respondents who have not electricity in their houses. It seems that respondents who have bank account ownership were 1.29 times more

likely to use contraception than those who have not, which may be due to the awareness of these women.

Again, the number of living children influences the use of contraception. Women with 1 child are 3.37 times more likely to use contraceptives than women without surviving children and women with 2 children are 3.86 times more likely to use contraceptives than women without surviving children. Women with 3 and more surviving children are 3.50 times more likely to use contraceptives than women without any surviving child. Women with one child were less likely to use contraception, while the chance of using a method increased as a woman's family becomes bigger than two children. Further occupation of husbands is found to have significant effect on contraception use. Respondents whose husbands are manual workers have 0.74 times less use of contraception that those whose husbands are not manual workers.

From the results of logistic regression analysis it also appears that those respondents where family planning workers do not visit their houses are 0.49 times less likely to use contraception than those where FP workers visit their house. In view of the likelihood that the visits of family planning workers can motivate the women by counseling on family planning methods and disseminating family planning services and supplies to achieve their widespread availability. Talking to husband about FP has also a net effect on current use of contraception. Among the women who have not discussed FP with their husbands they are 0.81 times more likely to use

<i>Fertility preference</i>	<i>No. of cases</i>	<i>Percentage currently using contraception according to their fertility preference</i>
Want no more:	650	490 (75.3)
Want more:	1174	816 (69.5)

Table 3: Percentage of women using contraception according to their fertility preference

<i>Characteristics</i>	<i>Odds Ratio [Exp (B)]</i>	<i>95% confidence interval</i>	
		<i>Lower</i>	<i>Upper</i>
Education of respondents-			
No education (Ref.)	1.000		
Incomplete primary	**1.03	0.665	1.602
Complete primary	*1.52	1.006	2.301
Secondary and higher	*2.13	1.398	3.248
Education of husbands-			
No education (Ref.)	1.000		
Incomplete primary	1.03	0.589	1.368
Complete primary	1.01	0.527	1.229
Secondary and higher	1.17	0.714	1.922
Residence-			
Urban (Ref.)	1.000		
Rural	0.79*	0.620	1.021
Religion-			
Muslims (Ref.)	1.000		
Non-Muslims	1.36	0.721	2.753
Electricity in the household-			
No (Ref.)	1.000		
Yes	1.201	0.918	1.572
Bank account ownership-			
No (Ref.)	1.000		
Yes	**1.290	0.964	1.726
Children ever born-			
None (Ref.)	1.000		
1	*3.605	2.532	5.133
2	3.516	2.493	4.959
3+	**3.049	2.161	4.302
Children surviving-			
None (Ref.)	1.000		
1	3.37	2.373	4.788
2	*3.86	2.718	5.486
3+	***3.50	2.430	5.049

Table 4: Odds ratio associated with the determinants of current contraceptive use for married women (Part 1)

Characteristics	Odds Ratio [Exp (β)]	95% confidence interval	
		Lower	Upper
Children dead-			
None (Ref.)	1.000		
1	1.26	0.828	1.904
2	0.55	0.223	1.331
3+	2.50	0.282	22.142
Visits of family planning workers			
Regularly (Ref.)	1.000		
Irregularly	0.49	0.715	1.091
Talked to husband about FP			
No (Ref.)	1.000		
Yes	*0.81	1.032	1.657
Occupation of respondents-			
Did not work (Ref.)	1.000		
Worked	1.115	0.782	1.592
Occupation of husbands-			
Non -manual (Ref.)	1.000		
Manual	**0.740	0.611	.897
Constant	**2.159		

Note: Ref = Reference Category. Here, ***, ** and * indicates $p < .001$ (highly significant), $p < .01$ (significant) and $p < .05$ (less significant).

Table 4: Odds ratio associated with the determinants of current contraceptive use for married women (Part 2)

contraception than those who have discussed FP.

Although, age at first birth did not show any significance (Table 5, p35), age at first marriage, and current age are highly related to contraceptive use. Women who had first marriage between age 18 and 19 were 1.23 times more likely to use contraceptives than those who had the same experience below age 18. The odds ratio increases as the age at first marriage rises. This shows that women who marry at an early age do not do something to plan their families. This was also found in bivariate analysis done earlier.

Conclusions and Policy Implications

In this study a limited attempt has been made to investigate some important aspects of contraceptive behavior among married women of our study area. The analysis shows that, use of contraception is low in our study area. According to survey data, the percentages of women aged 15-49 currently using any method is 69.4 respectively. Methods most widely used are the pill and condom. The common traditional methods are periodic abstinence and withdrawal. Notably, use of traditional methods is higher

in urban areas, which suggests some Bangladeshi couples may be discriminating in their choice of traditional methods. However, in general the main reasons for not using contraceptives among women may be attributed to several socio-economic and cultural factors, such as education, religiosity, social conservativeness, husband-wife communication, occupation, economic condition, including a need for more children, and opposition by the respondent to contraception.

Among the factors determining contraceptive use among women, education appears to be the most

significant; education is positively associated with contraceptive use. Evidence suggests that education not only increases awareness of social mobility and creates a new outlook and rationalism among couples, but also reduces desired family size by raising desired living standards, bringing about a better understanding of the reproductive process, better knowledge about health care and access to modern and effective means of birth control. The region of residence, occupation of husband and bank account ownership, visits of family planning workers and talking to husbands about family planning also appear to be significant factors determining the level of contraceptive use among the women.

A multivariate analysis of the determinants of current contraceptive use among women showed that for women, 9 out of 16 variables chosen influenced the use of contraception significantly. Women residing in rural areas, with no education, no bank account ownership, married below age 18 or without a living child, and not discussing FP with their husbands, are less likely to use contraception than other women.

In the light of the above discussions there are clear policy and programmatic implications. Any further acceleration in contraceptive prevalence and fertility decline will require major efforts directed at improving women's status, increasing access to the media and improving programme efforts in the low performing divisions especially in rural areas. The government of Bangladesh should aim not only at consolidating the level of success it has already achieved in family planning a part of the broader reproductive health service package. Priority should also be given to development in the social sector, including enhancement of women's status, especially through increased female educational and employment opportunities, and an improvement in access to media. Such investments, in addition to their direct benefits,

would further accelerate the process of rising use of contraception and further the process of fertility decline in the country.

1. Retrospective determinants: Demographic events that occurred in a given past period, generally terminating at the time of the survey

References

- Bertrand, J.T., E.K. Bauni, R.J. Lesthaeghe, M.R. Montgomery, O. Tambashe, and M.J. Wawer (1993). *Factors Affecting Contraceptive Use in Sub-Saharan Africa*. Washington D.C.: National Academy Press.
- Bongaarts, J. (1991): The KAP-Gap and the Unmet Need for Contraception. *Population and Development Review*, 17(2):293-313.
- BDHS (1999-2000). *Bangladesh Demographic and Health Survey, 1999-2000*. National Institute of Population Research and Training. Dhaka, Bangladesh. Mitra Associates and Macro international Inc. Calverton. Maryland, USA, 1999.
- Courtis, S. (1993). The Impact of Postpartum Redundant Use of Contraception of Contraceptive Failure Rates. Paper presented at the Population association of American Conference, May, 5-7, 1994.
- Caldwell, J. and P. Caldwell (1987). The Cultural Context of High Fertility in Sub-Saharan Africa. *Population and Development Review*, 13(3):409-437.
- Duza, Badrud and M. Nag. (1993). High Contraceptive Prevalence in Matalb, Bangladesh: Underlying Processes and Implications, in R. Leete and I. Alam (eds). *The Revolution in Asian fertility: Dimensions, Causes and Implications*, Oxford: Carelona Press.
- Khuda, B.J. Stoeckel and N. Piet-Pelon. (1997). *The Bangladesh Family planning Program: Learned and Directions for the Future*. Dhaka International Center for Diarrhoeal Disease Research, Bangladesh ICDDR, monograph, 6.
- Kabir M and A. K. Obidur Rab (1990). *Fertility and its Proximate Determinants. South Asia Study of Population Policy and Programmes Bangladesh UNFPA Dhaka*
- Mauldin, W.P. and S.J. Segal(1988). *Prevalence of Contraceptive Use: Trends and Issues. Studies in Family Planning*, 19(6)335-353.
- Omari, C.K. (1989). *Socio-cultural Factors in Modern Family Planning Methods in Tanzania*. Lewinston, NY, U.S.A.: The Edwin Mellen Press.
- Rutenberg, N., M. Ayad, L.H. Ochoa, and M. Wilkinson (1991): *Knowledge and Use of Contraception. Demographic and Health Surveys Comparative Studies No. 6*, Columbia, Maryland, USA: Institute for Resource Development/Macro International Inc.
- Ullah and Chakraborty. (1993). *Socio-Cultural Factors Affecting Practice of Contraception in Metropolitan Urban Areas of Bangladesh*. Paper presented at the seminar of Fertility of Bangladesh held at Coxe's Bazar, p.op.21-23
- Ross, J.A. and E. Frankenberg (1993): *Findings from Two Decades of Family Planning Research*. Population Council, New York.
- Rutenberg, N., M. Ayad, L.H. Ochoa, and M. Wilkinson (1991): *Knowledge and Use of Contraception. Demographic and Health Surveys Comparative Studies No. 6*, Columbia, Maryland, USA: Institute for Resource Development/Macro International Inc.
- Shahidullah, M. and N. Chakraborty (1989). *Factors Affecting Use of Contraception in Bangladesh: A Multivariate Analysis*. Department of Statistics, University of Dhaka-1000, Bangladesh
- Ullah and Chakraborty. (1993). *Socio-Cultural Factors Affecting Practice of Contraception in Metropolitan Urban Areas of Bangladesh*. Paper presented at the seminar of Fertility of Bangladesh held at Coxe's Bazar, p.op.21-23

<i>Characteristics</i>	<i>Odds Ratio [Exp (β)]</i>	<i>95%Confidence interval</i>	
		<i>Lower</i>	<i>Upper</i>
Current age-			
15-19 (Ref.)	1.000		
20-24	1.627	1.091	2.428
25-29	1.720	1.157	2.556
30-34	***1.979	1.327	2.952
35-39	**1.760	1.168	2.651
40-44	*2.035	1.288	3.267
45-49	1.177	0.702	1.973
Age at first marriage-			
<18 (Ref.)	1.000		
18-19	1.23	0.627	1.878
20-21	*1.69	1.029	1.978
22-24	**1.87	1.321	2.065
25+	0.87	0.336	1.123
Age at first birth-			
<18 (Ref.)	1.000		
18-19	1.143	0.802	1.629
20-21	1.408	1.029	1.928
22-24	1.604	1.057	2.435
25+	1.101	0.662	1.030

Note: Ref = Reference Category. Here ***, ** and * indicates $p < .001$ (highly significant), $p < .01$ (significant) and $p < .05$ (less significant).

Table 5: Odds ratio associated with the retrospective determinants¹ of current contraceptive use for women.

OP ED: A Tool and Tactic to Inspire Creative Writing Skills

Arab-speaking students, enrolled in undergraduate programs where English is the language of instruction, frequently express anxiety regarding scholarly writing assignments.

The opinion editorial (OP ED) provides an opportunity for students to focus attention on a topic of interest, express a viewpoint about a controversial issue, build a persuasive argument and communicate their thoughts to a target audience. The simple format of the OP ED (introduction, body, conclusion), combined with its brevity (500-700 words), offers a great starting point for novice writers. Besides feeling less overwhelmed in tackling a 2-3 page paper as opposed to a 5-10 page essay, students experience a sense of pride and confidence when they see their ideas in print and realize their opinions matter. The OP ED offers the chance for students to develop skills in idea expression, mount a logical, convincing, coherent argument and present their opinion in an organized, professional manner.

After refreshing my own skills in OP ED writing through a 9-hour course offered by the advanced writing centre at the College of North Atlantic in Qatar (CNA-Q), I embarked on transferring this learning to diploma –prepared nurses enrolled in the baccalaureate degree program at University of Calgary in Qatar (UC-Q). Following the procedure utilized by the CNA-Q facilitator, I provided students with guided instruction using a sequential, staged approach. A template was distributed outlining the step-by-step procedures for crafting an OP ED. Sample OP EDs from popular press and scholarly journals were presented as exemplars. Group and individual tutorials were offered, as requested, over a 3-week period. Students were assisted to access, review and integrate relevant evidence to support to their opinion-based thinking. They were encouraged to submit a draft OP ED for my review and feedback prior to the deadline submission date. The feedback process focused on offering suggestions to condense content, strengthen arguments, and improve the clarity or specificity of expressed ideas.

I observed dramatic improvement in students' OP EDs from initial to final versions. Some are publishable and will be submitted to editorial columns of local or international journals. I believe the "hands-on" supportive coaching (preceded by preliminary tips and guidelines), combined with constructive feedback and persevering practice increased students' skills, confidence and ultimately the quality of their OP ED. Overall, students described the learning experience as positive, albeit challenging. The exercise enabled them to realize the power and potential of creative writing, while sensitizing them to the possibilities for using their "voice" to share their views and increase public awareness about the profession of nursing.

Mary Lou King, RN, PhD
Assistant Professor
University of Calgary-Qatar
January 25, 2013