

Middle East Journal of Nursing



May 2012

VOLUME 6 ISSUE 3

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

Original Contribution and Clinical Investigation

- 3 **Nurses' Views on Patient Factors Associated with Polypharmacy in Ajman, UAE**
Lisha Jenny John, Jayakumary Muttappallymyalil, Jayadevan Sreedharan, Mohammed Arifulla, Arun Shirwaikar, Mohammed MohAhmed Fathi, Jenny Cheriathu
- 8 **Laryngeal mask airway placement: comparison between a traditional and an Alternative method in pediatric practice**
Emil Batarseh, Zahi Majali, Basel D.Makhamreh

Education and Training

- 12 **A Blended Educational Program: Impact of Cognitive and Metacognitive Learning on Undergraduate Students**
Leili Mosalanejad, Ahmad Alipour, Hossein Zare, Anahita Khodabakhshi Koolae
- 18 **Effect of Simulation on Students' Learning and Performance**
Leili Mosalanejad, Saed Sobhanian, Anahita Khodabakhshi Koolae
- 22 **Barriers for Continuing Professional Development among Nurses in Saudi Arabia**
Ahmad E. Aboshaiqah, Abdiqani Qasim, Nawal Abualwafa, Ahmad M. Al-Bashaireh

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

This is the third issue this year and has a number of papers that deal with nursing education which is a topic of great importance, in addition to other papers from different areas of the World.

A paper from Iran looked at the effect of simulation on students' learning and performance. The authors stressed that rapid advancements in hardware, software, and connectivity are helping to shorten the times needed to develop computer simulations for science education. An experimental study was conducted on 86 nursing students in a two year concurrent psychiatric course. One group was trained by constructive and written simulation and the other group by lecturing. Findings indicated there was significant differences in mean score of students' knowledge in the two groups with simulation

based education higher than traditional education, while, there wasn't any significant differences in students' performance in the two educational groups. It seems to be, this method, promotes students' knowledge in medical science fields.

A second paper from Iran looked at blended educational program. The authors stressed that blended learning is a mixture of various learning strategies and delivery methods to optimize the learning experience of the users. The objective of the authors was to compare a designed blended educational method with classical face to face method and the cognitive and metacognitive effect of the program on the students.

A comparative study was conducted amongst 41 first year nursing students of Jahrom University of Medical Sciences who participated in the course of mental diseases in 2008-2009. The students were randomly divided into two groups of face to face and blended educational methods. The tests used in this research included a short form of Metacognition Test (MCQ 30). There was a significant increase in student's metacognition in both groups after conducting of the course. There was a significant relationship between teaching, student's final score and student's metacognition. The mean of final scores of the students who participated in the blended educational group was significantly more than that of those who participated in face to face teaching approach. The use of blended educational method is recommended for teaching in medical and para-medical sciences.

A paper from Saudi Arabia explored barriers to the revision of Continuing Professional Development (CPD) for nurses. These barriers include time, accessibility, staff motivation, marketing and advertising, financial issues. The objective of this

study was to identify factors that Registered Nurses (RN) perceive as barriers to CPD in Saudi Arabia. A descriptive/correlation design was utilized in this study.

A paper from Ajman looked at Nurses' Views on Patient Factors Associated with polypharmacy. The authors stressed that Nurses need to be aware of the several patient related factors that contribute to polypharmacy. Nurses working in Gulf Medical College Hospital and Research Centre in Ajman, United Arab Emirates participated in the study. The fourteen item questionnaire regarding patient factors was used as the research tool. The most commonly identified patient factors were lack of awareness of polypharmacy (94.3%), seeing multiple physicians (82.9%), use of self medications (79%), ordering of refills without follow up (78%), and not reporting all the medications they are currently on (78%). The authors concluded that nurses are aware of the patient factors contributing to polypharmacy. They should be trained to implement this knowledge in reducing polypharmacy especially while counseling patient regarding medications.

A prospective double-blind investigation enrolled 105 children paper from Jordan and attempted to compare the quality of laryngeal mask airway placement between alternative and a traditional methods in children. The study showed that Placement method made no difference in terms of first trial success ($P > 0.05$). First trial successful placement was 85.5% and 90% in groups II and I respectively. The alternative placement method is an acceptable solution to the traditional method.

NURSES' VIEWS ON PATIENT FACTORS ASSOCIATED WITH POLYPHARMACY IN AJMAN, UAE

Lisha Jenny John (1)
 Jayakumary Muttappallymyalil (2)
 Jayadevan Sreedharan (2)
 Mohammed Arifulla (1)
 Arun Shirwaikar (3)
 Mohammed MohAhmed Fathi (4)
 Jenny Cheriathu (5)

(1) Department of Pharmacology, Gulf Medical University, Ajman, UAE
 (2) Research Division, Gulf Medical University, Ajman, UAE
 (3) College of Pharmacy, Gulf Medical University, Ajman, UAE
 (4) Department of Cardiology, Gulf Medical College Hospital & Research Centre, Ajman, UAE
 (5) Department of Pediatrics, Gulf Medical College Hospital & Research Centre, Ajman, UAE

Correspondence:

Dr. Lisha Jenny John
 Department of Pharmacology
 Gulf Medical University
 Fax No: +971 67480779
 Ph no: 0509370314
 Email: drlishaj@yahoo.com

Abstract

Background and objective: The specter of polypharmacy is an ever-increasing problem faced by healthcare professionals. Nurses need to be aware of the several patient related factors that contribute to polypharmacy. Therefore this study evaluated the views of nurses regarding patient-related factors associated with polypharmacy.

Methods: Nurses working in Gulf Medical College Hospital and Research Centre in Ajman, United Arab Emirates participated in the study during March to May 2011. The fourteen item questionnaire regarding patient factors was used as the research tool. Association between socio-demographic characteristics and items were analysed using Chi-square test ($p < 0.05$ was considered statistically significant).

Results: Of 105 nurses included, 92 were females and 13 males. The most commonly identified patient factors were lack of awareness of polypharmacy (94.3%), seeing multiple physicians (82.9%), use of self medications (79%), ordering of refills without follow up (78%), and not reporting all the medications they are currently on (78%). On comparing male and female nurses, the lack of awareness of polypharmacy was the most commonly stated patient factors by both groups. Male nurses gave a higher ranking for increased awareness of treatment options among patients in comparison to female nurses. Nurses with 5-10 years of experience had given a high score for ineffective doctor-patient communication and increased awareness of treatment options among patients in comparison to other groups.

Conclusion: Nurses are aware of the patient factors contributing to polypharmacy. They should be trained to implement this knowledge in reducing polypharmacy especially while counseling patients regarding medications.

Keywords: polypharmacy, patient factors, self medication

Introduction

Polypharmacy is a slowly increasing problem faced by health care professionals. Several investigations have been carried out in outpatient set ups, nursing homes, and old age homes, and among hospitalized patients and the elderly. Population databases, too, have explored the increased prevalence of polypharmacy in medical practice(1). It is a well documented fact that the elderly are the group most affected by polypharmacy. They have several concurrent co-morbid conditions, inability to metabolise and excrete drugs and added sensory and cognitive defects with a complex medication regimen constituting a significant challenge to the clinician (2). Grimmsmann et al. showed that polypharmacy exists even among general practice (3). Children who have chronic or serious acute conditions are equally at risk, especially those with diabetes or asthma, because of parents administering over the counter medications to their children. Adolescents also need attention and should be educated regarding polypharmacy.

Patient-related factors contributing to polypharmacy include the view that every symptom needs to be treated, non-compliance, and searching and having multiple consultations for chronic illnesses which includes taking herbal and alternative medicines(4). The problem may be compounded by the fact that the patient may be taking over-the counter or alternative medicines of which the physician is unaware(5).

As health care professionals, nurses need to be aware of the several preventable patient-related factors that add to the problem of polypharmacy, which could easily be avoided through adequate and efficient patient counseling. Therefore this study evaluated the views of nurses regarding patient-related factors associated with polypharmacy.

Methods

All the nurses working in a university teaching hospital in Ajman, United Arab Emirates participated in this population-based cross sectional study. Nurses who were involved in patient care, excluding those on vacation, participated in it during the period March to May 2011.

The fourteen item questionnaire was constructed after a thorough literature review. It contained questions regarding patient factors such as consulting multiple physicians, use of self-medications, inadequate follow-up, insistence on medications for every symptom, not reporting the medications they are on, etc., in addition to demographic details and duration of clinical experience. Prior to the commencement of the study the questionnaire was pilot tested and the necessary modifications were made.

The structured closed ended questionnaire was self-administered during duty hours. It aimed to determine the patient factors that may play a role in polypharmacy. The study protocol was approved by the Research and Ethics Committee of the University. Informed consent was obtained from the nurses before administering the questionnaire. Anonymity was maintained by asking them not to mention their names in the questionnaire provided.

After data collection was completed, it was entered into a Microsoft Excel spread sheet and transferred to Predictive Analytic Software 18 version for statistical analysis. The nurses were divided into three groups based on their nursing experience: <5years, 5-10 years and >10 years. Descriptive analysis was conducted for categorical variables, and to check for any association, Chi-square test was performed. A p value less than or equal to 0.05 was considered statistically significant.

Results

A total of 92 female and 13 male nurses participated in the survey. The number of nurses below 25 years of age was 24 (22.9%), 26-

30 years 47 (44.8%) and above 30 years 34 (32.4%). On the basis of the duration of experience, 42 (40%) nurses had nursing experience of less than five years, 47 (44.8%) were between five and 10 years and 16 (15.2%) had over 10 years of experience.

The most commonly identified patient factors by nurses were lack of awareness of polypharmacy (94.3%), seeing multiple physicians (82.9%), use of self medications (79%), ordering of refills without follow up (78%), not reporting all the medications they were currently on (78%) and lack of doctor-patient communication (78%). Details are listed in Table 1, next page.

The opinions of both male nurses and female nurses regarding the patient factors influencing polypharmacy were similar, with lack of awareness being the most common patient factor suggested. No statistically significant difference was noticed in the two groups. Details are listed in Table 2 (next page).

It was observed that across all the three groups of nurses of varied clinical experience, lack of awareness regarding polypharmacy was the most frequently mentioned patient factor contributing to polypharmacy. With respect to the other patient factors, those with less than 5 years and more than 10 years showed a similar pattern, with seeing multiple physicians and the use of self medication being cited as the common factors. Nurses with experience between 5-10 years identified increased awareness of treatment options through media and not reporting all the current medications to the physicians as the other common patient factors. Details of the cross-tabulation between patient factors and nursing experience are given in Table 3 - page 11.

Patient factors	Number	Percentage
Lack of awareness regarding polypharmacy	99	94.3
Seeing multiple physicians	87	82.9
Use of self medications	83	79.0
Automatic refills without follow-up	82	78.1
Not reporting all current medications	82	78.1
Ineffective doctor-patient communication	82	78.1
Awareness of treatment options through media	80	76.2

Table 1: Nurses' views on patient factors influencing polypharmacy

Patient factors	Gender	
	Male	Female
Lack of awareness regarding polypharmacy	12(92.3)	87(94.6)
Seeing multiple physicians	10(76.9)	77(83.7)
Use of self medications	10(76.9)	73(79.3)
Awareness of treatment options through media	10(76.9)	70(76.1)
Automatic refills without follow-up	9(69.2)	73(79.3)
Not reporting all current medications	9(69.2)	73(79.3)
Ineffective doctor-patient communication	9(69.2)	73(73.9)

Table 2: Gender based views on patient factors influencing polypharmacy

Discussion

The results of this study carried out among a nursing population identified the various patient factors contributing to polypharmacy from the nurses' perspectives.

Irrespective of the gender and the clinical experience, lack of awareness of polypharmacy was the most common patient

factor pointed out by the nurses in the present study. Junius et al. reported medication disagreement, and insufficient doctor-patient communication as the common patient factors contributing to polypharmacy(6).

The second most common patient factor identified by the nurses was seeing multiple physicians.

The major issue of polypharmacy involving multiple prescribers is the increased risk of adverse drug events. Furthermore, the risk of potentially inappropriate drug combinations increases with the number of physicians involved in the medical management of a patient, which can result in drug-drug interactions(7). Quebec et al. study among 65,000 elderly individuals

Patient factors	Clinical experience		
	<5 years	5-10 years	>10 years
Lack of awareness regarding polypharmacy	39(92.9)	45(95.7)	15(93.8)
Seeing multiple physicians	35(83.3)	37(78.7)	15(93.8)
Use of self medications	35(83.3)	36(76.6)	12(75.0)
Automatic refills without follow-up	33(78.6)	39(83.0)	10(62.5)
Not reporting all current medications	32(76.2)	41(87.2)	9(56.3)
Ineffective doctor-patient communication	31(73.8)	40(85.1)	11(68.8)
Awareness of treatment options through media	28(66.7)	42(89.4)	10(62.5)

Table 3: Nursing experience and views on patient factors influencing polypharmacy

found that patients visited a median of three different doctors per year and that the patients who had four or more prescribing doctors (21%) had three times the risk of a potentially interacting drug combination and twice the risk of a potential adverse drug reaction(8). Consulting multiple doctors makes it difficult for physicians to properly monitor their patients. Berenbein et al. suggested that the use of a well-designed polypharmacy intervention program can help reduce the costs associated with polypharmacy, as well as improve patients' health by helping to detect and avoid unnecessary drug use(5). Patients can also be encouraged to have a single dispensing pharmacist who would maintain drug profiles for each patient and use this information to screen for potentially inappropriate prescriptions(8).

Self medicating was identified as the third patient factor by the nurses leading to polypharmacy in this study. In a study conducted by Anthierens et al. among general practitioners regarding practice of polypharmacy, physicians identified that self medication was an important barrier in controlling polypharmacy, especially among the older and elderly population in whom polypharmacy is widely existent(9). Loyola et al. showed an association between the number of

medical consultations and the use of prescribed medications. Self-medication rate was lower among those who attended periodical medical consultations, and high self-medication rates may be associated with the lack of medical care(10).

Increased awareness of treatment options through media and not reporting all the medications patients are on currently were the two important patient factors identified by the majority of the nurses with clinical experience of 5-10 years. Increased publicity of the drug treatments through the various media such as the internet, radio, television and newspapers and magazines will encourage patients to resort to self medication practices as well as use different therapeutic systems such as modern medicine in combination with alternative medicine. As patients do not have knowledge of the clinical pharmacology of drugs they expose themselves to various drug related problems. Advertising also places additional pressure on providers to prescribe drugs on the demand of patients and their families(11).

Patients often do not report the medications prescribed by other physicians, over the counter medications, and the use of herbal and other alternative medications

or alcohol. This poses a high risk of drug-related problems as physicians prescribe medications without having this important drug information. Reviewing medications at every visit is a simple and useful step to reduce polypharmacy. Patients should be encouraged to bring the list of all the medications they are currently on. This includes over the counter and complementary and alternative medicines(12).

In conclusion, nurses are aware of the patient factors contributing to polypharmacy. They should be trained to implement this knowledge in reducing polypharmacy, especially while counselling patients regarding medications.

ACKNOWLEDGEMENT:

We acknowledge the timely help and support offered by Ms. Sreemol Danny, secretary to Research Division of Gulf Medical University for the data entry, and Repography Department for the printing of the survey forms.

References

1. Frye MA, Ketter TA, Leverich GS, et al: The increasing use of polypharmacotherapy for refractory mood disorders: 22 years of study. *Journal of Clinical Psychiatry*. 2000; 61:9-15.
2. Queneau P. Pitfalls of polypharmacy, particularly in the elderly. *Bull Mem Acad R Med Belg*. 2006;161(6):408-24.
3. Grimmsmann T, Himmel W. Polypharmacy in primary care practices: an analysis using a large health insurance database. *Pharmacoepidemiol Drug Saf*. 2009; 18(12):1206-13.
4. Kingsbury SJ, Yi D, Simpson GM. Rational and Irrational Polypharmacy. *Psychopharmacology Psychiatric services*. 2001; 52 (8):1033-37.
5. Berenbeim DM. Polypharmacy: Overdosing on good intentions. *Manag Care Q*. 2002; 10(3):1-5.
6. Junius-Walker U, Theile G, Hummers-Pradier E. Prevalence and predictors of polypharmacy among older primary care patients in Germany. *Family Practice* 2007;24(1): 14-19.
7. Kohler G, Bode-Boger S, Busse R et al. Drug-drug interactions in medical patients: effects of in-hospital treatment and relation to multiple drug use. *Int J Clin Pharmacol Ther* 2000; 38(11): 504-13. Available at: doi:10.1093/fampra/cml067 (Accessed on 20th June 2011).
8. Tamblyn R, McLeod P, Abrahamowicz M et al. Do too many cooks spoil the broth? Multiple physician involvement in medical management of elderly patients and potentially inappropriate drug combinations *Can Med Assoc J* 1996;154(8):1177-84.
9. Anthierens S, Tansens A, Petrovic M, et al. Qualitative insights into general practitioners views on polypharmacy. *BMC Family Practice* 2010;11:65. Available at <http://www.biomedcentral.com/1471-2296/11/65> accessed on 21st June 2011.
10. Loyola Filho AI, Uchoa E, Firmo JOA, et al. Estudo de base populacional sobre o consumo de medicamentos entre idosos: Projeto Bambuí. *Cad Saude Publica*. 2005; 21(2):545-53.
11. Austin RP. Polypharmacy as a Risk Factor in the Treatment of Type 2 Diabetes. *Diabetes Spectrum* 2006;19(1):13-16.
12. Masoodi NA. Polypharmacy: To Err is Human, To Correct Divine. *BJMP* 2008;1(1) 6-9.

LARYNGEAL MASK AIRWAY PLACEMENT: COMPARISON BETWEEN A TRADITIONAL AND AN ALTERNATIVE METHOD IN PEDIATRIC PRACTICE

Abstract

Objective: To compare the quality of laryngeal mask airway placement between an alternative and a traditional method in children.

Methods: Our prospective, double-blind investigation enrolled 105 child subjects, aged 3 months - 15 years, of both genders, ASA I (American Society of Anesthesiologists), and assigned for different elective minor superficial operations under general halothane inhalational spontaneous laryngeal mask airway anesthesia at Princess Haya Hospital' Aqaba, Jordan, during the period July 2007 - July 2008.

Subjects were randomized into two groups. Group I subjects (n=50) received laryngeal mask airway (LMA) through an alternative method and group II subjects (n=55) received laryngeal mask airway via the traditional method.

The number of placement attempts and duration required for success to attain a patent airway in both groups was recorded.

Results: Placement method made no difference in terms of first trial success ($P>0.05$). First trial successful placement was 85.5% and 90% in groups II and I respectively.

Conclusion: The alternative placement method is an acceptable solution to the traditional method.

Key words: Anesthesia: general, spontaneous; LMA: traditional, alternative; children.

Emil Batarseh
Zahi Majali
Basel D.Makhamreh

Department of Anesthesia,
Intensive Care and Pain
Management, KHMC, Amman, Jordan

Correspondence:

Emil Batarseh , MD , JBA
Department of Anesthesia, Intensive Care and Pain Management,
KHMC, Amman, Jordan
Email: batarsehemil@yahoo.com

Introduction

Use of laryngeal mask airway permits the maintenance of a patent airway with successful insertion rates of the LMA on the first attempt, varying between 67-92% in pediatric practice (1).

Since its introduction in 1983 by Brain, the LMA has achieved increasing popularity (2).

The laryngeal mask airway has achieved a great popularity also in pediatric anesthesia practice. The laryngeal mask airway is a novel device that fills the gap in airway management between endotracheal intubation and the use of face mask. The laryngeal mask airway is inserted blindly into the pharynx, forming a low pressure seal around the laryngeal inlet.

Because insertion of the laryngeal mask airway by the standard technique is not always easy in children due to the posterior pharyngeal curvature, some different maneuvers have been described to minimize this problem(3): Inserting the LMA laterally, applying the mask firmly against the hard palate, pulling the tongue forward, repositioning the head, adding or removing air to the cuff, applying continuous positive airway pressure, using a laryngoscope and inserting the LMA like a Guedel oropharyngeal airway.

The ability to maintain a patent airway and provide effective ventilation is the main objective of pediatric anesthesiological procedures. This is achieved mainly with the use of a face mask or an endotracheal tube. Both of these devices have major limitations from a strictly anatomical point of view and require adequate operator skills. The aim of LMA was of producing an airway device that would be more practical than the face mask and less invasive than the tracheal tubes. The functional elegance of the LMA is that it forms a low pressure airtight seal against the glottis rather than plugging the pharynx, thus combining ease of insertion and adequate airway patency (4).

Airway management is more successful with LMA technique. This is because transoral passage of instrumentation into the hypopharynx is easier than into the glottic inlet. There are four reasons: Firstly, the hypopharynx is a posterior structure and is easier to locate. Secondly, it is wider providing a bigger target. Thirdly, it is funnel- rather than tubular-shaped, so that imprecisely positioned instrumentation will be redirected to the target and fourthly, it is better aligned with the oropharyngeal axis, making instrumentation less likely to get snagged (3).

The objective of our investigation was to assess the effectiveness of the modified procedure in comparison to the standard procedure regarding LMA insertion.

Methods

Our prospective, double blind investigation included 105 child patients, aged 3 months - 15 years, ASA I, of both sexes and scheduled for various elective minor superficial surgical procedures under general halothane inhalational spontaneous laryngeal mask airway anesthesia at Princess Haya Hospital, Aqaba, Jordan, during the period July 2007 - July 2008, after obtaining approval from the local ethics committee of the Jordanian Royal Medical Service directorate and written informed consent from the parents. Subjects were randomly divided into two groups using sealed envelopes. Group I children (n=50) received LMA using the modified method and group II children (n=55) received LMA via the standard method. The size of the LMA used was indicated using the patients body weight; size 1,1.5,2,2.5 and 3 masks for <5,5-10,10-20,20-30 and >30 kg of body weight, respectively.

The LMA was lubricated with saline before insertion. Induction of inhalational anesthesia was performed with 3-5% halothane mixed with 70% nitrous oxide in 30% oxygen. Before insertion of the LMA, anesthesia was maintained using 2-3% halothane in oxygen. No muscle relaxants were used. An anesthesia technician opened the patient's mouth by pulling down the jaw. Intravenous cannulation was done after the child was anesthetized, if <4 years, using 22G.

The standard insertion procedure was illustrated by Brain (5). The LMA was inserted with the cuff fully deflated and against the palate, then the cuff was inflated after insertion. In the modified insertion procedure, a two-thirds moderately inflated LMA (using 2,4,6,8 and 12 ml air for size 1,1.5,2,2.5 and 3 masks respectively) was inserted with its lumen facing laterally left. While rotated clockwise

90°, it was passed downward into the position behind the larynx. Then the cuff was fully inflated. Successful insertion was clinically called for if manual ventilation with the reservoir bag was easy and the chest wall movement was smooth.

The number of trials on LMA insertion and the duration to achieve good airway were recorded. Vital signs including heart rate and pulse oximeter readings were recorded. In the case of failed LMA insertion, endotracheal intubation was achieved. An observer blinded to the insertion procedure evaluated the two procedures.

Statistics

Parametric data were analyzed using Student's t test. P-value <0.05 was considered to be statistically significant.

Results

There were no significant differences in terms of gender, age, weight, duration of anesthesia and size of the LMA. (Table 1 - opposite). The overall study group was 110 child patients, but 5 were excluded from the investigation, who were ASA II and III physical status classified.

Successful insertion was attained in 85.5% of subjects in group II and in 90% of patients in group I, at first trial. The two groups were comparable regarding the successful insertion rate, the number of trials at insertion (Second trial; GII, 4 and GI, 3, P>0.05. Third trial; GII, 3 and GI, 2, P>0.05) and the duration required for insertion (GII, 0.4 minutes and GI, 0.37 minutes, P>0.05).

Endotracheal intubation was achieved in 1 case in GII and in no cases in GI, P>0.05. In the present study, the LMA standard approach success rate was 85.5% at first trial, increasing to 92.7% at second trial and 98.2% at third trial. In the modified approach, the success rate was 90% at the first trial but was 96% at the second trial and 100% at the third trial.

Discussion

The LMA has become popular in pediatric anesthesia practice. Nagai S, et al showed the potency of the modified method of LMA insertion (6). LMA advantages over conventional laryngoscope guided tracheal intubation are more rapid insertion and increased success rate. The modified method can be used in this investigation as an alternative procedure to the standard method of insertion.

Brimacombe and Berry (7) stated that if the standard approach is used correctly, the first time success rate should be >98% in less than 20 seconds.

Wakeling et al (8) demonstrated that deflating the cuff first would allow more difficult insertion due to the presentation of a softer edge to the posterior pharyngeal wall. Lopez-Gil, et al (9) used a lubricant, whereas we moistened the LMA with saline only. He demonstrated that there was a rapid improvement in LMA skills in pediatric anesthesia practice when the standard technique was used. Gaining more experience may decrease the rate of unsuccessful insertion. Airway trauma was less frequent with the LMA than with ETI. This is not surprising as more force is required to see the glottic inlet than the hypopharynx. Perhaps the pharyngeal/esophageal mucosa is stronger than the laryngeal/tracheal mucosa as it has evolved to accommodate solid bodies and not just passage of gas.

This modified technique I where a two-thirds inflated LMA is inserted with its lumen facing laterally forces the patient's mouth to open wider and keeps the tongue from being pushed back into the air passage. These technical features result in easy insertion through the pharynx for inexperienced anesthesiologists. In addition, the softer edge of the partially inflated LMA protects the pharyngeal mucosa from trauma during insertion. Causes of difficulty with LMA insertion include choice of wrong LMA size and difficulty in maneuvering through the

	G II	G I
Number	55	50
ASA I(no)	55	50
Gender (no)		
M	20	21
F	35	29
Weight(kg)-mean+/-SD	25.3+/-6.4	27.1+/-4.6
Age(years)-mean+/-SD	8.5+/-5.3	9.1+/-3.9
Time of anesthesia(min)	61+/-11	69+/-9
Mean+/-SD		

Table 1: Patients' characteristics

	GII	GI
No. of successful insertions(%)		
First trial	47(85.5)	45(90)
Second trial	4	3
Third trial	3	2
Effective airway time(min)	0.40+/-0.13	0.37+/-0.1
Mean+/-SD		
Endotracheal intubation	1	0

Table 2: LMA insertion comparison

posterior curvature of the pharynx (10). Differences in the airway anatomy and the frequent presence of tonsillar hypertrophy can complicate LMA insertion in children. Maneuvers to overcome this difficulty include increased head extension, jaw thrust maneuvers pulling the tongue forward, firm pressure on the LMA and using the index finger to guide the mask(10).

O'Neil et al (11) have reported an alternative method of insertion with the LMA partially inflated in children. They described improved ease of insertion and explained that the softness of the inflated cuff allows for easier adaptation to the differing pharyngeal characteristics of the pediatric airway. Nevertheless, Brain compared insertion techniques concerning the mechanisms of deglutition and recommended the standard technique.

Although both methods of insertion were satisfactory, partial inflation of the LMA improved the ease of insertion in children as assessed by time to insertion and success rate on the first attempt. Inflation of

the cuff at the smaller sized LMA after insertion often displaces the LMA and alters its position while the inflated LMA tends to insert to the proper depth and requires no further adjustment. In the standard technique however, insertion of the LMA is not always easy. Therefore, it is reasonable that anesthesiologists devise other insertion techniques. We believe that this technique is to be recommended in certain situations.

Trevisanuto et al (12) found that the occurrence of first time failure decreased overtime in their study and they thought that the change represented an element of familiarization with the LMA insertion technique. The relatively small but statistically significant difference is meaningful, since problems associated with insertion can be attributed to inadequate depth of anesthesia which may occur with prolonged placement. Our 1.8% incidence of problems that resulted in abandonment of the LMA is comparable to that reported in a similar study evaluating uses of the LMA in pediatric practice (1).

Conclusion

This modified technique is an acceptable alternative to the standard technique I in children. This technique is likely to allow easy insertion of the LMA for unskilled anesthesiologists. Insertion of the LMA with the cuff inflated is equally successful to the standard uninflated technique in experienced anesthesiologists. This implies that the modified inflated approach would be acceptable to the general population of LMA users.

References

1. Shahin NJ, Mehtab A, Hammad U, et al. A study of the use of laryngeal mask airway (LMA) in children and its comparison with endotracheal intubation. Indian journal of anaesthesia 2009;53(2):174-8.
2. Pennant JH, White PF. The laryngeal mask airway. Its uses in anesthesiology. Anesthesiology 1993;79:144-63.
3. Benumof JL. Laryngeal mask airway. Indications and contraindications. Anesthesiology 1992;77(5):843-6.

4. Ghai B, Wig J. Comparison of different techniques of laryngeal mask placement in children. *Curr Opin Anesthesiol* 2009;22(3):400-4
5. Patel B, Bingham R. Laryngeal mask airway and other supraglottic airway devices in pediatric practice. *BJA* 2009;9(1):6-9
6. Nagai S , Inagaki Y , Hirosawa J , et al. Modified insertion technique of the laryngeal mask airway in children: a comparison with standard technique. *Anaesthesia* 2003:59-61.
7. Brimacombe J, Berry A. The laryngeal mask airway: anatomical and physiological implications. *Acta Anesthesiol scand* 1996;40(2):201-9.
8. Wakeling HG, Butler PJ, Baxter PJC. The laryngeal mask airway: a comparison between two insertion techniques. *Anesth Analg* 1997;85:687-90.
9. Lopez GM, Brimacombe J, Cebrian J, et al. Laryngeal mask airway in pediatric practice. *Anesthesiology* 1996;84(4):807-11.
10. Ghai B, Makkar JK, Bhardwai N, et al. Laryngeal mask airway insertion in children: comparison between rotational, lateral and standard techniques. *Pediatric anesthesia* 2008;18(4):308-12
11. O'Neill B, Templeton JJ, Caramico L, et al. The laryngeal mask airway in pediatric patients: factors affecting ease of use during insertion and emergence. *Anesth Analg* 1994;78:659-62.
12. Trevisanuto D, Micaglio M, Ferrarese P, et al. The laryngeal mask airway: potential applications in neonates. *Fn.bmj.com* 2008.www.archdischild.com.

A BLENDED EDUCATIONAL PROGRAM: IMPACT OF COGNITIVE AND METACOGNITIVE LEARNING ON UNDERGRADUATE STUDENTS

Abstract

Blended learning is a mixture of various learning strategies and delivery methods to optimize the learning experience of the users. The objective of this study was to compare a designed blended educational method with classical face to face method in the cognitive and metacognitive effect of the program on the students.

A comparative study was conducted amongst 41 first year nursing students of Jahrom University of Medical Sciences who participated in the course of mental diseases in 2008-2009. The students were randomly divided into two groups of face to face and blended educational methods. The tests used in this research included a short form of the Metacognition Test (MCQ 30).

There was a significant increase in students' metacognition in both groups after conducting of the course. There was a significant relationship between teaching, student's final score and student's metacognition. The mean of final scores of the students who participated in the blended educational group was significantly more than that of those who participated in the face to face teaching approach.

The use of blended educational method is recommended for teaching in Medical and Para-medical sciences.

Key words: Face to face education, Educational Psychology; Active Learning, Computer Uses in Education; Academic achievement, Metacognition

Leili Mosalanejad (1)
Ahmad Alipour (2)
Hossein Zare (3)
Anahita Khodabakhshi Koolae (4)

(1) Department of Education, Jahrom University of Medical Sciences, Jahrom, Iran

(2) Department of Education, Jahrom University of Medical Sciences, Jahrom, Iran

(3) Department of Psychology, Payamnoor Universities, Tehran, IRAN

(4) Corresponding Author: Department of Counseling; University of Social Welfare and Rehabilitation Sciences. Tehran, Iran.

Correspondence:

Khodabakhshi Koolae
Department of Counseling; University of Social Welfare and Rehabilitation Sciences.

Tehran, Iran

Email: anna_khodabakhshi@yahoo.com

Introduction

One of the most important challenges of education in the 21st century is how to train students to have the necessary readiness for confronting a changing society and the complexities of the information explosion age. "In addition, the professional world asks the universities to provide formative opportunities that train students to fulfill their roles as working professionals". Ugarte & Naval (2008).

Today, teaching and learning are mostly supported by digital material and electronic communication. At present, the World Wide Web (Web- based learning (WBL), problem-based learning (PBL), and collaborative learning are the most powerful educational options in higher education. Employing new teaching methods and especially electronic learning is on the top of the educational curriculums of all countries and mainly the advanced countries. Taradi, et al (2005), Henrich & Sieber (2009).

A new pedagogical paradigm is replacing the classical system with its unique characters. Therefore,

it gives priority to the use of some techniques which can develop maximum learning experiences for the students and provide deep learning by using the benefits of both classical and new methods.

In order to respond to these requirements, blended learning has become increasingly popular and is particularly suitable to the process of transitioning towards E-learning from classical forms of teaching. Hoic, et al, (2009).

Blended educational method has been widely studied and its mechanisms explained by different research institutes and universities such as Stanford University and Tansy University. (Valitan (2002), Harvey (2003), Allison et al (2003), Michael & Renate (2004), Rossett (2002)). The available evidence demonstrated that blended learning is better than the classical methods and the E-learning technology and is not only able to transfer information more efficiently but it is also a more effective pedagogical method (Alvarez, 2005). Most students who experienced blended learning preferred the blended learning to classical methods. (Chamberlain, & Reynolds, (2008)).

Some researchers remark that blended learning derives its success from collaborative learning (Valiant, 2002). This method could decrease the gap between theoretical and practical subjects. (Retrouvey & Finkelstein (2008)).

The result of the study done by Sung et al, 2008 showed that by using the blended method information and knowledge of students increased remarkably, but this issue did not have any significant effects on self-efficiency and clinical skills. There are different models in the blended educational method;

Model A: This model is applied in the skills of mastery learning. Some factors like key-learning, online-learning, learning through personal interactions, and learning through sources are considered in this model.

Model B: This model contains different layers of learning and using various sources to reach the given goals. In this model, teaching begins with the classroom level and face-to-face method and then includes new teaching methods such as e-learning and other sources.

Model C: This model is named the learner channel model. It begins with e-learning and then presents learning based on case study and problem solving and after those a practical workshops is used to stabilize the findings and improve the students' skills (Valitan, 2002).

Other definitions and models are much broader and include a wide range of elements that can possibly be blended within a course.

The following possible elements could be blended:

Media/tools/technologies (including electronic and non-electronic)

Time (synchronous or non-synchronous)

Pedagogical (teaching and learning strategies and activities)

Curricular (interdisciplinary, experiential, theoretical)

Institutional (inter and intra articulation agreements)

Cultural (worldviews, globalization)

Program delivery including; place dependence/independence, individual/group systems (Power, 2008).

Alvarez (2006) introduced five models of blended learning which can be used practically:

Model (1): Self-electronic learning integrated with other pedagogical methods and using other pedagogical methods

Model (2): Instructing the teacher to present blended teaching using self-methods of electronic learning

Model (3): Live electronic learning with self-learning

Model (4): Self-learning through continuing occupation learning by web

Model (5): Self-electronic learning using computer simulations.

Little and Pegler, suggested in their book "Preparing for blended e-learning" another framework for a discussion of blended learning. They propose an approach to blended learning that looks at four elements: space, time, activities and tools. They outline their approach using the following matrix (to confine the matrix to three dimensions they combine space and time on one axis). For each axis, they provide a continuum from teacher regulated to student regulated (Power, 2008a, 2008b).

Different assumptions proposed about blended learning can be divided into three categories:

Blended learning through personal method supported by the educational mediator for development of special skills and knowledge (needed skills).

Integration of different learning methods into communicational means for development of special behaviors and perceptions (needed perceptions).

Integrated learning with knowledge management and leadership are needed for development of capabilities of work environment (needed capability) (Harvey 2003).

Considering that the medical field requires learning of theory, practical, combined with skills of psychomotor domain, integrating blended educational method in medical schools is of great importance.

We assumed that blended learning based on critical thinking effect to students' metacognition and interaction between them can affect students' academic achievements.

There is lack of accurate information about the cognitive impact of blended educational method and therefore this study was conducted in order to evaluate the impact of blended method on cognitive effect compared with the classical method of teaching. We hope this research can provide a dynamic ground for studying the pedagogical research in the field of medical sciences and also the results of this research can be used by our researchers for attaining better education.

Methods

A comparative study was conducted among 41 nursing students of Jahrom Medical Sciences medical school who participated in the course of psychological diseases in the academic year 2008-2009.

Inclusion criteria in this study were the students' registration in theoretical courses and exclusion criteria were the students' lack of cooperation in the learning process, their involvement in education and who avoided completing the respective forms. We considered the organization of the class to encourage critical thinking to attain a balance between the content and the

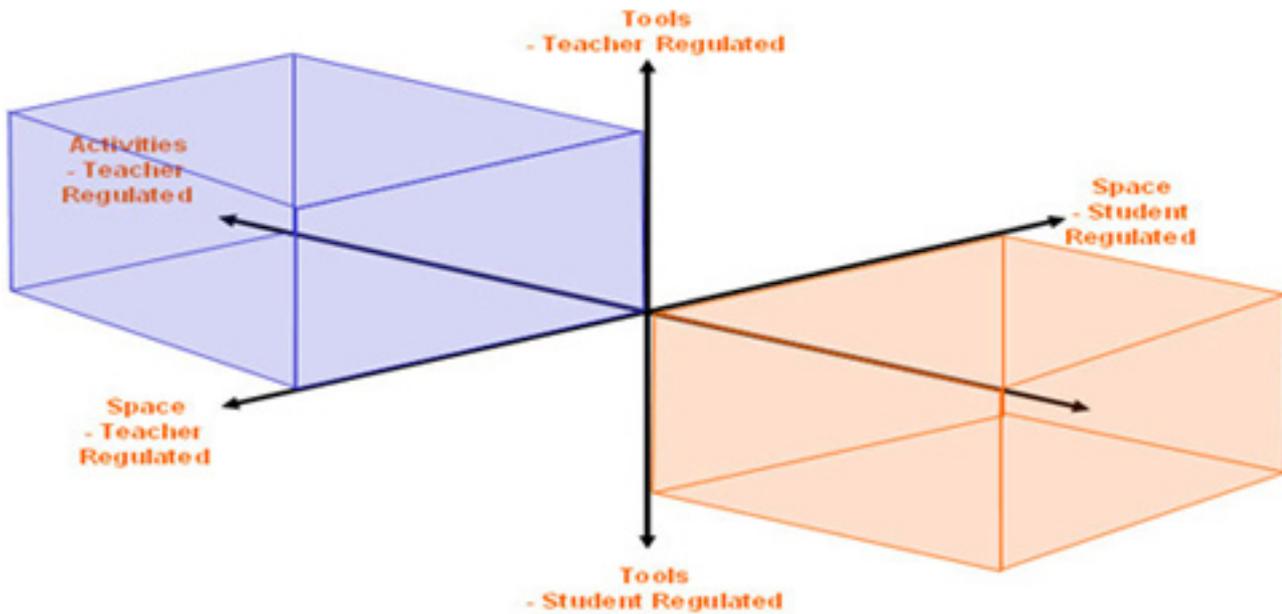


Figure 1: Blended educational model

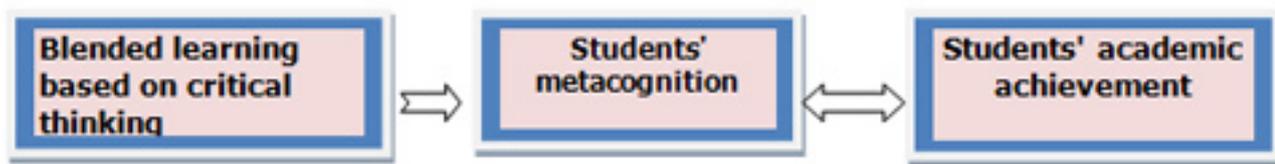


Figure 2: Assumption Model

process of education, between lecture and interaction, create discussion in the class and use student centered learning via assignments and educational projects.

Participants:

To design this research, the students were randomly divided into two 20 and 21 person groups according to their numbers and orienting the empirical groups to reduce resistance to involvement in active education, we used face to face education to present the basic principles and it was maintained by active educational techniques such as PBL, scenario, writing simulation, group discussion and role playing (15 two hour weeks). Then it was maintained by asynchronized electronic education such as self-electronic learning via digital libraries and scientific sources, presenting abstracts of scientific essays from the latest relevant sources by the student (15 two hour weeks, the last 15 of each session). Students

contacted the teacher by email (during the term and before each session), and using educational films and CDs.

Processing:

In the other group we used other usual teacher-centered methods and for preventing the impression of selection and abiding to the ethics of education, we gave an extract of the material presented by the empirical group to the students who received traditional education.

We also explained to respective groups how to use the electronic resources. Students in both groups were randomly distributed and the midterm and final exams were taught identically. In educationally designing the research we considered the standard educational design via the following steps for designing and practicing blended education. These steps consisted of assuring the learner preparation (justification of education type), presenting the material (using active

educational strategies mixed with online education), displaying the working mechanism (searching sources and digital libraries' systems supporting the student's learning), practice (giving feedback), evaluation (comparative, summative, individual and group conferences and presenting scientific essays), providing support (access to online system and professional service for digital sources), and supervising the student's learning and sustaining communication with emails and cooperation in learning.

Instruments, Data Gathering, and Procedures:

The tests used in this research were a normalized version of Metacognitive Questionnaire Test. Mcq30 test is used for measuring metacognition. This form evaluates five factors including self confidence, positive beliefs about worry, self-consciousness, negative beliefs about uncontrollability of thoughts and dangers, and the need to control thoughts. Alpha Cronbach is reported in the range of 0.72 and

0.93. (Cartwright & Wells, 2004), and it is normalized by (Shirinzadeh et al, 2008) in Iranian society. A qualitative analysis was performed to investigate the degree of students' satisfaction with the blended teaching method.

Analysis:

Paired t-test was used to compare mean scores in the pretest and posttest result; student t-test was used to compare the differences of mean scores in the two groups of traditional and blended teaching and chi-square and analysis of variance to assess interaction between variables.

Result

Among 21 students who were in the blended educational group 20 (93.8%) were satisfied with this kind of teaching. They believed that this kind of teaching approach could provide in-depth learning, improve their knowledge (n=19), facilitate access to essential resources (n=13), and provide more self-learning (n=16). They also mentioned that it was a user-friendly method (n=8).

Mean score of metacognition in the blended group before and after education showed that all metacognitive aspects were changed except cognitive confidence, although there were no significant differences. Table (2)

There were significant differences in metacognition of the conventional group before and after education in two factors of beliefs about uncontrollability and danger and Cognitive confidence.

Moreover, the student t- test didn't show any significant differences between the mean of metacognition in both educational groups. It revealed that both kinds of teaching played the same role in the improvement of students' metacognition. Mean of Positive beliefs about worry, Cognitive confidence and Self-consciousness in the blended group was higher than in the other group.

There was a significant difference between type of teaching, mean scores of academic achievement and metacognition in factor of the need to control thoughts.

There was a significant difference in the final score of students in the conventional and blended groups; blended teaching had more effects on the improvement of students' final scores.

Discussion

The resultant finding of this study showed that 93.8% of students were satisfied with the blended teaching method. Some of the research states that most teachers have a positive attitude towards blended instruction as they believed it played a role in improving the quality of their instruction.(Oh et al, 2009), however some researchers revealed that the perceived communication, collaboration, and satisfaction levels of students in blended learning varies according to their levels of computer and Internet literacy. (Kim, et al (2009)). The study showed that classical teaching also had a positive effect on improving critical thinking skills of students in the present research. Much evidence reveals that a lecturing and teacher center method is more effective in presenting the background and introduction to a topic or issue (Ressignol, 1997).

This study revealed that a blended educational method had an effect on improving learning, attitude and critical thinking skills; a similar finding was reported from other studies (Owen and Walden, 2001; Marinick, 2001; Ressignol, 1997; Tiwari and Lai, 2002; Gokhale, 2003; Staib, 2003).

The results of our review suggest that the mean of two subjects of positive beliefs about anxiety, and self-consciousness in the blended teaching were more than the classical teaching, and the mean of two other subjects of beliefs about uncontrollability and danger, and the need to control thoughts in the blended teaching were less than the

classical teaching. The scores of academic achievement in blended learning were higher than in the traditional group.

The medical education literature has concluded that there was a relationship between cognitive abilities and academic achievement, so that the more improved these abilities, the more gained academic achievements (Skatika, 2002).

The results of the foregoing research confirmed that a decrease in anxiety, negative thoughts, feeling of uncontrollability and danger, and the need to control thoughts of students receiving the blended teaching had a positive effect on academic achievement. However, negative beliefs about anxiety or anxiety and mental rumination had a harmful effect on cognitive self-regulation. (Mellings & Alden (2000). Some research implied that negative beliefs about anxiety, the need to control thoughts, and feeling of danger could justify the lower scores of academic achievement. (Matthews et al; 1999) Others, emphasized the positive effects of active learning on the students' academic achievements. Graham (1997), Hall (1999), Anderson (2002), Seif & Mesr Abadi (2003). Furthermore, the result showed that blended teaching had more effects on student learning or final score. This may be due to the identified relationship between web-centered teaching based on problem solving skills and improvement in students' attitudes about learning. (Monguest(2000),Taradi et al (2005), Campbell et al (2008)).

Conclusion

The study showed the positive effect of a blended learning method on learning or final score of the students and therefore the use of blended educational method is recommended for teaching in Medical and Para-medical sciences.

Face-to-face tutorials based on active leaning	15 x 2 hours
Researching, reading, planning, designing ideas	Over 10 weeks
Online reflective journal entries	1 per week x 15 weeks
Asynchronous discussions	3per week x 15 weeks
Evaluation	15 week

Table 1: Activities in the blended model

Metacognition	Before	After	T	P
Beliefs about uncontrollability and danger	12.70±3.22	14.10±2.77	1.41	0.173
Positive beliefs about worry	10.75±2.7	32.25±0.69	1.31	0.20
Cognitive confidence	16.94±3.11	16.65±4.77	1.81	0.08
Self-consciousness	13.80±3.36	15.45±1.87	0.44	0.66
The need to control thoughts	12.30±2.73	12.80±3.27	1.56	0.13

Table 2: Mean score of metacognition in blended group before and after education

Metacognition	Before	After	T	P
Beliefs about uncontrollability and danger	12.78±1.74	17.26±2.32	7.83	0.001
Positive beliefs about worry	15.30±1.59	15.45±3.23	21.3	0.83
Cognitive confidence	11.93±3.30	16.7±3.1	5.20	0.001
Self-consciousness	13.52±1.88	14.90±9.87	0.65	0.51
The need to control thoughts	12.87±1.74	13.25±3.17	0.47	0.64

Table 3: Mean score of metacognition in conventional group before and after education

Metacognition	Conventional	Blended	T	P
Beliefs about uncontrollability and danger	17.26±2.32	14.10±2.77	0.60	0.55
Positive beliefs about worry	15.45±3.23	32.25±0.69	1.00	0.34
Cognitive confidence	16.7±3.1	16.65±4.77	0.97	0.34
Self-consciousness	14.90±9.87	15.45±1.87	2.01	0.052
The need to control thoughts	13.25±3.17	12.80±3.27	0.92	0.36

Table 4: Differences between Mean of metacognition In Two Groups

Dependent variable	Critical thinking skills	Mean	DF	Sum of square	F	P
Student final score	Beliefs about uncontrollability and danger	1.39	4	5.58	0.29	0.87
	Positive beliefs about worry	4.78	3	14.34	1.12	0.35
	Cognitive confidence	3.75	4	15.02	0.80	0.53
	Self-consciousness	1.13	4	4.54	0.24	0.91
	The need to control thoughts	4.74	8	37.97	2.18	0.04

Table 5: Analysis of variance to comparison of interaction between type of teaching, metacognition, and final score of students

Student's final score	Mean	T	P
Blended group	15.67(1.65)	3.06	0.004
Classical group	13.88(2.06)		

Table 6: Difference of the mean score of academic achievement in both educational groups

References

- Allison, R., Felicia D., & Rebecca, V. F. (2003). Strategies for Building Blended Learning. Learning Circuits. [Retrieved Jun 30, 2003], from http://www.astd.org/LC/2003/0703_rossett.htm
- Alvarez, S. (2005). Blended learning solutions. In B, Hoffman (Ed.), Encyclopedia of Educational Technology. Retrieved April 3, 2009, from Anderson N. J. (2002). The role of metacognition in second language teaching and learning. Brigham Young University. Eric Digest
- Badawi M. F. (2009). Using blended learning for enhancing EFL prospective teachers' pedagogical knowledge and performance. Online submission, Retrieved 2009-03-00, paper presented at learning & language. The spirit of the age conference. Carino, Egypt, 14-15.
- Cartwright H.S., & Wells A. (2004). A short form of the metacognitions questionnaire. Behavioral Research and Therapy, 42 (4), 385-396.
- Chamberlain M., & Reynolds C. (2007). Blended Learning Initiatives in Higher Education: Opportunities and Challenges. In Montgomerie C. & Seale J. (Eds.), Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2397-2402.
- Campbell M., Gibson W., & Hall A. (2008). Online vs. face-to-face discussion in a web-based research methods course for postgraduate nursing students: A quasi-experimental study. International Journal of Nursing Studies, 45(5), 750-759.
- Graham, S. (1999). Telecommunication and the future of cities, Debunking the myths. Cities, 14(1), 21-2.
- Gokhale, A. A. (1995) Collaborative learning enhances critical thinking. Journal of Technology Education. Retrieved January 1/2006, From <http://scholar.lib.vt.edu/ejournals/jTE/Jte-v7n1/gokhale.jte-v7n1.html> (7).
- Hall, R. (1999). The organization and development of discursive practices for having a theory, Discourse Processes, 27(2), 187-218.
- Harvey, S. (2003). Building Effective Blended Learning Programs. Issue of Educational Technology, 43 (6) , 51-54.
- Henrich, A., & Sieber, S. (2009). Blended learning and pure e-learning concepts for information retrieval: experiences and future directions. Information Retrieval, 12 (2), 117 - 147.
- Hoic B. N.; Mornar V.; & Boticki I. (2009). Blended Learning Approach to Course Design and Implementation. Education, IEEE Transactions , 52(1), 19-30.
- Kim, K. J.; Bonk, C.; & Teng, Y.T. (2009). The present state and future trends of blended learning in workplace learning across five countries. Asia Pacific Education Review, 10(3), 299-308.
- Magnusson L. (2000). The impact of the use of inquiry based learning as a teaching methodology on development of critical thinking. Journal of Nursing Education, 39(8), 360-364.
- Marinick H. M. (2001). Thinking critically about critical thinking. Retrieved January /01/2006, from <http://www.mcli.dist.maricopa.edu/forum/fall01/tl.html> accessed
- Matthews G.; Hillyard E.J.; & Campbell S. E. (1999). Metacognition and maladaptive coping as components of test anxiety. Clinical Psychology and Psychotherapy, 6, 111-126.
- Michael D., & Renate M. P. (2003). Pattern for Blended, Person central Learning: Strategy, Concepts, Experience, and Evaluation. Technical Report No. TR-20033004, Department of computer and Business Informatics, University of Vienna, October, 2003.
- Melling T. M.; & Alden, L. E. (2000). Cognitive processes in social anxiety : The effect of self-focus, rumination and anticipatory processing. Behaviour Research and Therapy; 38, 243-257.
- Oh E.; & Park S. (2009). How are universities involved in blended instruction? Educational Technology & Society. 12(3), 327-342.
- Owens D. L., & Walden S. D. (2001). Peer instruction in learning laboratory, a strategy to decrease student anxiety. Journal of Nursing Education, 40(8), 375-377.
- Retrouvey J. M., & Finkelstein, A. B. A. (2008). Blended learning in orthodontic diagnosis: An interactive approach. Journal of the Canadian Dental Association, 74(7), 645-649.
- Rossett A. (Ed.). (2002). The ASTD E-Learning Handbook. New York: McGraw-Hill. books.mcgraw-hill.com/authors/rossett.
- Seif A. & Mesrabadi J. (2003). The effectiveness of teaching learning strategies on reading speed , retrieve and comprehension of different texts. Education, 2(19); 54.
- Shirinzadeh D. S. (2008). Comparison of metacognitive and responsibility beliefs in patients with obsessive disorder, generalized anxiety disorder and normal individual. Iranian journal of psychiatry and clinical psychology, 14(1).
- Sung Y. H., Kwon I. G., & Ryu, E. (2008). Blended learning on medication administration for new nurses: Integration of e-learning and face-to-face instruction in the classroom. Nurse Education Today, 28 (8) , 943-952.
- Taradi S. K.; Taradi M.; Radic, K. & Pokrajac N. (2005). Blending problem-based learning with Web technology positively impacts student learning outcomes in acid-base physiology, Advances in Physiology Education, 29(1), 35-39.
- Ugarte C., & Naval C. (2008). Training in Professional Skills: A Blended Learning Experience. ESE-Estudios Sobre Educacion, 15, 53-86.

EFFECT OF SIMULATION ON STUDENTS' LEARNING AND PERFORMANCE

Abstract

Rapid advancements in hardware, software, and connectivity are helping to shorten the times needed to develop computer simulations for science education. This was a quasi experimental study on 86 nursing students in a two year concurrent psychiatric course. One group trained by constructive and written simulation and the other group teaches by lecturing. Findings indicated there was significant differences in the mean score of students' knowledge in two groups as a simulation based education was higher than traditional education, while, there was no significant differences in students' performance in the two educational groups. It seems to be, this method, promotes students' knowledge in medical science fields.

Keywords: construct simulation; written simulation; knowledge; performance

Leili Mosalanejad (1)
Saed Sobhanian (2)
Anahita Khodabakhshi Koolae (3)

(1) Assistant Professor , Nursing Department, Jahrom University of Medical Sciences, post code: 74148-46199, Jahrom, Iran.

(2) Assistant Professor , Education Department, Jahrom University of Medical Sciences, post code: 74148-46199, Jahrom, Iran.

(3) Assistant Professor, Counseling Psychology Department, University of Social Welfare & Rehabilitation Sciences, Post code:19834, Tehran, Iran

Correspondence:

Anahita Khodabakhshi Koolae, Assistant professor, Counseling Psychology Department, University of Social Welfare & Rehabilitation Sciences, Post code: 19834, Tehran, Iran.

Email: anna_khodabakhshi@yahoo.com

Introduction

Simulations are various training methods that have been used as a form of apprenticeship in the early years of 1900 (academic medicine, 2006). Pressures from a rapidly changing health care landscape are hastening the shift to simulation-based training in many countries. Shortening of training programs, reduction of working hours and ethical imperatives to protect patients from harm are having a profound effect upon traditional approaches to training. Moreover opportunities for training within a clinical setting are unpredictable, and the learning need of the trainee must always be subordinate to the clinical needs of the patient (Champion & Gallagher, 2003).

Healthcare professions are heavily task and performance-based where non-technical skills, decision making and clinical reasoning are important alongside integrity, empathy and compassion. A range of simulation techniques are very well placed to be used alongside clinical placements. These can be employed to enhance learning of healthcare professionals in safe environments, without compromising patient safety, while maintaining a high degree of realism (khan et al, 2011). There are three major simulations, conclude

simulated live, virtual simulations and constructing simulation (Moorthy, Vincent, & Darzi, 2005).

Simple simulation is required for core skills training. Cognitive simulation is introduced as a way in which procedural skills training can be achieved. Virtual world simulation opens up significant opportunities for team skills training (Windsor, 2009).

Each of these three types of simulations is based on technical skills, communication with patients, and team members, decision making, clinical judgment and professionalism (Kneebone & Bello, 2005).

Today, many universities can provide lifelong learning from a virtual learning environment. The results clearly suggest the benefits of using simulation in enhancing student learning.

This virtual learning not only provides access to education at different times in their lifetime, but also, they can promote learning without the need of face to face interactions (Abraham, 1995; Pugh & Youngboold, 2002; Van Ravesteijn, Hageraats, & Rethans, 2007).

Attempts to simulate the learning conditions provide actual conditions. Concepts learned are transferable to the real world (Joyce, Weil, & Calhoun, 2006). Advantages of simulation techniques such as constructing simulation reduces anxiety, increases confidence and facilitates business and theoretical problems. Using simulations as a virtual method will increase abilities in the future (Hook, Eder, 2005; Gross, 2004). Many studies examine the unique proposition that simulation is superior to traditional methods when it comes to applied learning and is superior in the process of knowledge transfer. Also it indicates the usefulness of simulation for developing skills leading to the application of classroom knowledge to real-world projects. This approach reduces pressures and constraints of the clinical environment (Hook & Eder, 2005; Gross, 2004). Also, the use of interactive exercises through simulations increases individual skills in a safe environment, but its main concern is the usefulness of this method to provide appropriate feedback to students (Watkinson et al, 2004). Yet there is no reliable information by randomized clinical trial that shows the effectiveness of simulations. Also there is no agreement about the effectiveness of simulation in the promotion of psychomotor skills (Gaba, 2004; Johannsson et al, 2005). Gordon et al studied two groups of students from traditional and simulation methods. Despite increased scores in each group at the end of the study, there were no significant differences between the two groups (Gordon et al, 2006).

Schwartz et al used simulation and traditional methods for teaching students. In this study, using simulation had no advantage over traditional training. The researchers recommend further research (Schwartz, 2006). Considering the difficulties in psychiatric field training and according to many of the abstract principles and concepts in this field, we used constructing simulations by using real scenarios with regard to teacher training experience in psychiatric fields.

Method

1.2. Participants:

This study is a quasi experiment on two concurrent groups of students in a psychiatric course, by convenient sampling. 27 students trained by face to face or conventional methods and 30 students in other groups through simulations or scenario based learning. To prevent and reduce the number of students and for the acquisition of better results in education, the students were selected from two consecutive years. The same course content, teaching principles, field training and evaluation principles by standard check list was provided in the two groups and we compared the score of students in theory and their performance in the clinical course. Due to lack of student awareness about mental illness and loss of student knowledge about how to take care of these patients, we considered students' knowledge as zero and the two groups were evaluated by final scores of theoretical and practical fields.

2.2. Measures & Procedure:

All participants' scores were calculated from students' final scores, quizzes and students' activity and practical work by standard check list that was considered from twenty.

All of the students in the experiment groups trained by constructing Simulations and scenario based learning, while in this group, we used group discussion to learn how to communicate and care about patients. We used student T- test to evaluate differences between the scores of students in both theory and practical parts, also we used Chi-square test to evaluate the relationship between scores and other demographic findings in SPSS Version 16.

Results

This study was conducted to find the impact of constructing simulation on students' learning and performance. 14.8 percent of students were male and 85.2 percent were female.

Difference mean scores in the psychiatric course suggest that, the mean score of the group trained by the simulation was higher than the other group who trained by the traditional approach. Using such an approach enhanced student learning (Table 1 - opposite page). There was no significant differences in the students' performance (Table 1). The scores of students, were divided into four parts as; weak, moderate, good and excellent. There was no relationship between students' grades and gender ($p=0.07$). However a relationship between sex and theoretical scores were significant ($p=0.01$).

Conclusion

The development of focused patient simulation used for education, training, and research is tracking the motivations, evolution to commercial availability, and efforts toward assessment of efficacy of the same for teaching (Salas and Burke, 2002). Garrett, MacPhee and Jackson discussed effective learning resulting from faculty and student evaluations. Students identified positive learning experiences and indicated that real-time patient status changes proved valuable to them. Also, using these techniques offered a safe environment for improving competence (Quinn, Keogh, McDonald, Hussey, 2003). Yom described the development of student satisfaction with a distance learning course using both online simulation and face-to-face methods in an RN-BSN program in Korea. Most of the students enjoyed the course and they wanted more nursing courses to be offered through the online simulation and on-site format (D'Alessandro, Lewis, & D'Alessandro, 2004). The results showed that the learning outcomes of students in the psychiatric field through constructing simulation have increased compared to students who train through the usual methods. Botezatu, Hult, & Fors, found Five main themes to be associated with successful simulation use in medical curriculum: Learning, Teaching, Assessment, Authenticity and Implementation. Medical students perceive Virtual Patients as important learning and assessment

Differences between two groups in theoretical and practical course

Groups	mean	(SD)	T	DF	P
Theory Simulation group(n=28)	15.50	(1.87)	2.58	51	0/004*
Conventional (n=25)	14.05	(1.63)			
Practice Simulation group(n=28)	18	(0.033)	52.5	51	0/74
Conventional(n=25)	18.04	(0.54)			

*P<0/01

Table 1

tools, fostering clinical reasoning, in preparation for the future clinical practice (Sedlack & Kolars , 2002). Gaba stresses the fact that finding the right combination of traditional education, experience simulated real patient care, is a challenge to provide more effective simulation purposes and focus on key skills. Also, this effect influences accuracy in the preparation of scenarios, provide personal feedback and performance evaluation, conducted under guidance and fitting similar real world experiences (Gaba, 2004). While, Gordon and colleagues used two groups of traditional and simulation; results showed, despite increased scores in each group, there was no significant difference between the two groups (Gordon et al, 2006). Schwartz and colleagues used traditional and simulation based education methods for teaching groups of students. In this study, using simulation had no advantage over traditional training. Also review assessment scores of students performing skills at the beginning of the study showed that, in spite of two groups being similar to each other at the beginning of study, at the end of the study students' scores had increased. Each grade level increased at the end of the study group compared to baseline (Schwartz et al, 2006). In research was performed by Quin, Keogh,

and MacDonald on dental students, students trained by traditional methods, combining traditional education with virtual simulations without access to the instructor and the traditional method and virtual-access to the teacher. In this study, no significant difference in scores was observed in the three groups, but mean scores indicated better scores than the traditional education group (Reland, J. Johnson, & Adams, 2009). But most researchers believed that the use of virtual education to replace with a more appropriate approach than traditional methods and other restrictions that reduce the use of critical attitudes towards the traditional method, the lack of interaction between teacher and students, as the software problems and effective method that has been mentioned, can be frequency limitations (Windsor, 2009). Usefulness of simulation as compared to other methods is still unproven and little research has been considered that simulation method is superior to traditional approaches (Gaba, 2004; Johannsson et al, 2005). Some other researchers recommended a combination of styles (traditional and virtual training) in improving skills (Rutledge et al, 2008, Yom, 2008, & Siddiqui, Khan, Akhtar, 2008). Our research showed that the simulation based education effect to

students' learning in the theoretical field, but this result states that these approaches have no effect to students' performance compared with traditional approaches, as the two education groups had the same effect on students' performance in the psychiatric field. In contrast to these results, some of research emphasises the effect of simulation on students' skills and performance. Windsor discussed using simulation in surgical skill acquisition. This result showed that, simple simulation has an effect on students' 'basic skills and cognitive simulation effects to acquisition of specialized skills in surgery (Aggarwal, 2006). Sedlack and Kolars reported the usefulness of virtual simulation in improving patient satisfaction and increased resident skills in the capability of colonoscopy and these approaches promote the ability of first year residents in the early stages of education and ready them for entry to other stages (Austin et al, 2007). Some others emphasise that the simulation approach can be provided in this way to gain the necessary prerequisites for entry into clinical departments. Also, some believe that there is no difference in the effect of the two methods on students' learning and performance, but the simulation method can improve their efficiency and provide effective training even though simulation is

rapidly moving into education. The technical performance of focused patient simulation has improved tremendously during the last decade, as it facilitates realistic and true-to-life multidisciplinary team-training in the psychiatric field. Future work should determine whether acquired skills transfer to education, clinical practice and improved patient care.

References

- Abraham S. (1995). Vaginal and speculum examination in medical curricula. *Aust NZ Obstet Gynaecol*, 35(1): 56-60.
- Aggarwal R, Grantcharov T, Moorthy K, Hance y, Darzi A. (2006). A Competency-based virtual reality training Curriculum for the acquisition of laparoscopic psychomotor skills. *The American Journal of Surgery* ; 191 (1) : 128-133.
- Austin, Katherine A.; Lawson, William D.; Holder, Eric.(2007). Efficacy and Performance in Professional Development Higher Education-Sponsored ITV Instruction. *Journal of Computing in Higher Education*, 18 (2): 51-81.
- Best K. Online Training involves many Factors. *Network* 1998; 19(1): 42-54. Available from: http://www.fhi.org/en/RH/Pubs/Network/v19_1/TrainFactors.htm.
- Carr SE, Carmody D. (2004). Outcomes of teaching medical students core skills for women's health: The pelvic examination educational program. *American journal of obstetrics and gynecology*; 190: 1382-7.
- Champion HR, Gallagher AG. (2003).Surgical simulation: A good idea whose time has come.*Br J Surg*; 90:767-68.
- D'Alessandro D M, Lewis T E, D'Alessandro M P.(2004). A pediatric digital storytelling system for third year medical students: the virtual pediatric patients. *BMC Med Educ*. 19;4:10.
- Gaba DM.(2004). The future vision of simulation in health care. *Qual Saf Health Care*; 13(suppl1): 2-10.
- Geyoushi B, Apte K, Stones R.W. (2003). Simulators for intimate examination training in the developing world. *Journal of Family Planning and Reproductive Health Care*; 29(1): 34-35.
- Gross N. (2004).GP Supervisors Manual: Teaching and Learning in a General Practice. North Queensland: 1-37.
- 21- Gordon JA, Shaffer DW, Raemer DB, Pawlowski J, Hurford WE, Cooper JB. (2006)."A randomized controlled trial of simulation-based teaching versus traditional instruction in medicine: a pilot study among medical students." *Adv Health Sci Edu Theory Pract*; 11(1): 33-9
- Hook V, Eder J. Online Simulation in Health Care: A Model for Improving Patient Safety and Ensuring Quality. Call Tel 2005 Available. from:<http://www.medsim.org/press/documents/AIMS2005MeetingSummary.pdf>.
- Joyce B, Weil M, Calhoun E. (2006). Models of teaching. 7th ed. Tehran: Kamal tarbiat.
- Johannsson H, Ayida G, Sadler C.(2005). Faking it? Simulation in training of obstetricians and gynecologists. *Curr Opin Obstet Gynecol*; 17(6): 577-61
- Khan K, Pattison T, Sherwood M.(2005). Simulation in medical education. *Med Teach*. 33(1):1-3.
- Kneebone R, Bello F. (2005). Technology in surgical education. In: Taylor I, Johnson CD (eds). *Recent Advances in surgery*. London : Royal Society of Medicine press Ltd:9-21
- Moorthy K, Vincent C, Darzi A. (2005).Simulation based training. *BMJ*; 330: 493-4.
- Pugh C, Youngblood P. (2002). Development and validation of assessment measures for a newly developed physical examination simulator. *Journal of the American Medical Informatics Association*; 9: 448-460.
- Quinn F, Keogh P, McDonald A, Hussey D.(2003).A pilot study comparing the effectiveness of conventional training and virtual reality simulation in the skills acquisition of junior dental students. *Eur J Dent Educ*.;7(1):13-9.
- Reland J, Johnson N., & Adams, D. (2009). Blended learning in education: effects on knowledge and attitude. *Br J Nurse* , 18(2) , 124-30.
- Rutledge CM, Barham P, Wiles L, et al. (2008). Integrative simulation: a novel approach to educating culturally competent nurses. *Contemp Nurse*.;28(1-2):119-28.
- Salas E, Burke CS. (2002). Simulation for training is effective. *Qual Saf Health Care*; 11: 119-120.
- Sedlack RE, Kolars JC. (2002). Colonoscopy curriculum development and performance-based assessment criteria on a computer-based endoscopy simulator. *Acad Med*.;77(7):750-1.
- Siddiqui A, Khan M, Akhtar S.(2008). Supply Chain Simulator: A Scenario-Based Educational Tool to Enhance Student Learning. *Computers & Education*, 51 (1) : 252-261.
- Schwartz LR, Fernandez R, Kouyoumjian S, Compton S. (2006). A Randomized-Comparison Trial of Traditional versus Human Patient Simulation in Medical Student Education. *SAEM ANNUAL MEETING 2006* Available from: http://www.aemj.org/cgi/content/abstract/13/5_suppl_1/S164.
- The human face of simulation: patient -focused simulation training: *Academic Medicine*, 81(10):919-924 available at <http://journals.lww.com/academicmedicine/fulltext/2006>.
- Van Ravesteijn H, Hageraats E, Rethans J.(2007). J gynecological examination in The Netherlands. *Training of Med Teach*; 29(4): 93.
- Watkinson G, Spencer A, Monger E, Weaver M, Gobbi M, Lathlean J, et al. (2007).Virtual interactive practice: utilizing healthcare information systems to contextualize the skills associated with clinical decision making within nurse education. *Stud Health Technol Inform*.;107(Pt 1):746-52.
- Windsor JA.(2009). Role of simulation in surgical education and training. *ANZ J Surg*.79(3):127-
- Yom YH .(2004). Integration of internet-based learning and traditional face-to-face learning in an RN-BSN course in Korea. *Comput Inform Nurs*; 22(3) : 145-52.

BARRIERS FOR CONTINUING PROFESSIONAL DEVELOPMENT AMONG NURSES IN SAUDI ARABIA

Abstract

Background: The provision of Continuing Professional Development (CPD) for nurses is challenged with many barriers. These barriers include time, accessibility, staff motivation, marketing and advertising, financial issues.

The objective of this study is to identify factors that Registered Nurses (RN) perceive as barriers to CPD in Saudi Arabia.

Design: A descriptive/correlation design was utilized in this study.

Setting: Data was collected from a public metropolitan hospital, which is a tertiary care center that supports health services research.

Participants: A convenience sample of 600 RN's was surveyed. **Methods:** A researcher-constructed instrument was used.

Results: The study showed three major barriers affecting participants' attendance of CPD; 38.2% agree that financial support was the major barrier, followed by commitment/scheduling problems to attend the educational activities with 29.7%, and finally the ability to attend the class regularly with a 19.6%.

Conclusions: Administration needs to provide adequate time for nurses to attend programs. The planning of CPD must address these barriers to be successful in increasing the knowledge and skills, and thereby improve the quality of patient care.

Keywords: Continuing Professional Development, nurses, barriers,

Ahmad E. Aboshaiqah (1)
Abdiqani Qasim (2)
Nawal Abualwafa (3)
Ahmad M. Al-Bashaireh (4)

(1) Ahmad E. Aboshaiqah, BSHA, RN, MS, MHHA, PhD.
 (2) Abdiqani Qasim, RN, MScN, FNP, ACNP
 (3) Nawal Abualwafa, RN, MSN
 (4) Ahmad M. Al-Bashaireh, RN, MSC

Correspondence:

Ahmad E. Aboshaiqah, BSHA, RN, MS, MHHA, PhD.
 Assistant Professor
 Chairman of Nursing Administration and Education Department
 College of Nursing, King Saud University
 Kingdom of Saudi Arabia
 Tel. 00966503154993
 Fax. 0096614698597
Email: aaboshaiqah@ksu.edu.sa

Introduction

There are many barriers to providing professional development for nurses. Basic nursing education alone cannot effectively meet the challenging and complex demands of the expanding range of health care. Technological advances and continuous changes in nursing practice, create a demand on nurses to take continuing education (CE) courses to remain competent because CE is considered as one means of maintaining competency (Schweitzer & Krassa, 2010). The advances in health care services place greater demands on staff, altering their roles and requiring them to attain new competencies. Staff need to be supported by education and training if high standards of care are to be maintained (Ward & Wood, 2000). Nurses are also increasingly seeking out professional opportunities for themselves. Changes in the working lives, career patterns and lifestyles of many nurses, combined with more ambitious career aspirations than in the past, are leading many to initiate and undertake educational activities in order to advance their careers (Davies et al., 1990). Staff development is the systematic process of assessment, planning development, and evaluation

that enhances the performance healthcare providers (American Nurses Association [ANA], 2004). Academic education consists of courses taken for undergraduate or graduate credit in an institution of higher learning that may or may not lead to a degree or completion of a certificate program.

Professional development needs are challenged by multi-factorial reasons that place barriers to their fulfillment. These barriers include time, accessibility, staff motivation, marketing and advertising, and financial issues (Ward & Wood, 2000, Lee, Tiwari, Choi, Yuen, and Wong, 2005). Age, staff shortages, unsupportive managers, staff attitude, availability of programs, work pressure, family commitments, unsafe environment, and participation of the nurses' on their own time are also identified as barriers. These must be addressed in order for continuing education and continuing professional development to be successful in increasing the knowledge and skills of staff and thereby improving the quality of patient care (Ward & Wood, 2000).

Literature Review

CPD is obtaining more recognition as a part of lifelong learning in both its personal and professional implications. It is broadly considered as a critical component in achieving health care delivery needs in addition to the learning needs of healthcare personnel (Arcand and Neumann, 2005). Nurses, who make up the largest professional group in any health care system, have to equip themselves with the necessary knowledge, skills, values, and attitudes to meet changing public demand in an appropriate manner. Continued professional development (CPD) and education is increasingly emphasized in building nurses' experiential and educational basis with the ultimate goal of ensuring quality of health care to the public. The American Nurses Association (ANA, 2004) has defined nursing professional development as the lifelong process of active participation by nurses in learning activities that assist in developing and maintaining their continuing competence, enhance their professional practice, and support achievements of their career goals. Nursing professional development activities can be described as existing in the domains of continuing education, staff development, and academic education (ANA, 2004). According to the ANA, continuing education refers to systematic professional learning experiences designed to augment the knowledge, skills, and attitudes of nurses. The expected goal for continuing education is to improve clinician's competence and enhance health care quality through lifelong learning (American Nurses Association, 2004).

The International Council of Nurses (ICN) code of ethics for nurses, (2000) states that the nurse carries personal responsibility and accountability for nursing practice, and for maintaining competence by continual learning. The ICN believes that access to continuing education is critical and a fundamental workers' right. It is essential that nurses' associations, governments and other

bodies facilitate career development for nurses. The standards of the Joint Commission International on Accreditation (JCIA) (2003) of health organizations recommend that each staff member receives ongoing in-service program and other educational and training opportunities to maintain or advance their skills and knowledge.

According to Price, Akpanudo, Dake, and Telljohann (2004), continuing education helps to minimize gaps between education and training and practice, boosts clinical skills, and endorses the development of needed knowledge and practice skills for continued professional competence. CE is necessary for maintaining and sustaining safe health care and competent human resources considering the rapidly changing health care environment (Levett-Jones, 2005; Penz, D'Arcy, Stewart, Kosteniuk, Morgan, & Smith, 2007). In order to meet patients' expectations for high quality care; health care practitioners need to enhance their knowledge and skills. CPD is looked at as the organized maintenance, enhancement and widening of knowledge and skills, and the expansion of personal qualities required for implementation of professional, procedural tasks throughout the individual's working life (Morgan, Cullinane, and Pye, 2008). In an Irish study on the professional development of nurses and midwives, it was found that health service employers are now expected to demonstrate their commitment to continuous learning by facilitating existing staff to undertake programs that enhance the quality of patient care and contribute to the employee's career development (National Council for the Professional Development of Nursing and Midwifery, 2004). Therefore, staff should be given the opportunity to engage in activities that enable them to acquire new skills and knowledge, and support job advancement. However educational activities are directly influenced by an organization's mission, goals, values, priorities, and resources (American Nursing Association, 2004). When an

organization plans to implement professional development programs, leaders, educators, and staff should consider the barriers that may be encountered along the way. Consideration of such barriers might allow for reduction and minimization in their organization, thereby improving the quality of patient care (Cho & Berge, 2002).

In an integrative literature review exploring research on deterrents to nurses' participation in CE; Schweitzer and Krassa (2010) reviewed ten research studies published between 1990 and 2008 addressing barriers to nurses' CE participation. The results revealed that the most frequent deterrents found were the cost of attending CE, inability to get time off from work to attend CE, and child care and home responsibilities. The nurses' pursuit of professional development faced many barriers. In a British study (Ward & Wood, 2000) time, accessibility, financial issues, staff motivation and marketing/advertising emerged as significant barriers to education. The quality and duration of education offered, the method of delivery, the use of qualified faculty, and the relevance to their practice, affect motivation. Staff shortages, lack of encouragement from managers, lack of funding and lack of information about professional development offerings have also been identified in the literature as barriers to nurses' professional development (Ward & Wood, 2000, Beatty, 2001, Lee, Tiwari, Choi, Yuen, and Wong, 2005).

In a study by Yfantis, Tiniakou, and Yfanti (2010) to appraise the concept of Continuing Professional Development (CPD) in a provincial hospital and analyze whether the CPD can offer opportunities for Advanced Professional Development (APD) in nursing staff in Greece; they reported that nurses were unable to attend the CPD activity, because the clinic was too busy in order to attend and the other difficulty because the CPD program was already booked. In addition, CPD/Training was cancelled,

or training too expensive. Not surprisingly financing education is a major barrier for nurses wishing to participate in professional development activities. This includes not only the problem of funding course fees but also the cost to the institution for replacement staff (Ward & Wood 2000, Beatty, 2001, Bahn, 2007). Also making nurses pay the training could discourage those lower paid nurses especially those with families to support. Age, physical environment, excessive overtime, lack of participation and involvement, incentives for promotion, and legal requirements play an important role in nurses' motivation (Incorvaja 1999, Penz et al., 2007). Accessibility is also vital if education and training is to reach the staff it is targeting (Ward & Wood 2000). Staff and managers need to be informed of the available educational opportunities. Reasons for not attending continuing education activities identified by Cooper (1997) were insufficient funding for registration fees, inadequate staffing, and lack of support. Other barriers identified by Nalle, Wyatt, and Myers (2010) were CE program costs, travel requirements, time away from work, and the lack of relevant programs. According to Scanlan and Darkenwald (2004) non-attendance in the training could be due to family and work constraints, lack of benefits, and lack of quality, and disengagement of the learner. In a study conducted by Tranter, Westgarth, Kemp, & Macneil (2010) to identify key barriers for undertaking CE, several key barriers were identified by respondents such as lack of recognition of achievement of higher studies, financial issues, time to study, and lack of encouragement to undertake further studies. Most of the literature in this field focuses on motivating factors, incentives, but little research has focused on barriers to nurses' CPD. This study explores factors that deter nurses' CPD. Most literature about CPD was conducted in Western Countries. Despite its importance, the CPD received little attention in the Middle East countries including Saudi Arabia.

Therefore, the purpose of this study is to identify the factors that Registered Nurses (RN) perceive as contributing barriers to continued professional development in Saudi Arabia.

Methods

A quantitative descriptive survey design, utilizing a questionnaire was used to collect data on how registered nurses perceived CPD and to identify the barriers to CPD. According to Babbie and Mouton (2002), descriptive research provides a detailed picture of participants' views or engagement in specific behaviors which can then be stated in numerical terms and the frequency with which a specific characteristic or variable occurs in a sample.

The study population of this research was registered nurses who are currently licensed to work in Saudi Arabia. A convenience sampling methodology was used to recruit registered nurses. Attempts to reduce the limitation of the sampling method and to increase appropriate representation was made to ensure the inclusion of a wide range of registered nurses across the hospitals. For example, the surveys were distributed to all of the patient care units across the hospitals and to different shifts. A convenience sample of 600 registered nurses was surveyed using a researcher-constructed instrument determined to be valid and reliable. The sample for the research was recruited from a public hospital. This metropolitan hospital is a tertiary care center which supports health services' research. It consists of a general hospital, maternity hospital, pediatric hospital, rehabilitation center, and primary care clinics with a total of 2,000 beds. In addition to the hospitals, there are a burn unit, kidney center, intensive care facilities, and spinal cord injury treatment unit. This facility was selected because it has an affiliation with and support from the Ministry of Health, thereby having the potential to impact healthcare in Saudi Arabia. Participants

were recruited from this facility through the nursing department. The first phase was meeting with the nursing department director to describe the purpose and aims of the research. A memorandum was sent from the nursing department director to RNs. The purpose of this memorandum was twofold - to explain the purpose of this study and confirm management approval to conduct the study. A packet containing a description of the research and instructions were attached to each survey. The investigator went to each nursing unit at different time intervals that were mutually convenient for the staff. Locked drop boxes were placed at each unit in order to protect the individual identity of each participant. Approval was obtained from the Institutional Review Board prior to the beginning of the study. Anonymity and confidentiality were assured. Participation in the study was voluntary, and the participants were anonymous. The survey cover letter outlined the purpose and importance of the survey and stated that the data will be reported only as an aggregate. The cover letter explained that once the survey was returned, it would not be possible for the participant to withdraw because there was no way to identify which survey the participant had completed. Participants were instructed not to place personal identifiers on the survey itself. Instructions on how to complete the survey were included at the top of the survey. The participants were not in any danger of physical/psychological risk or physical discomfort. They had the opportunity to contact the researcher for further information related to the results of the research. Completion and return of the survey was indicated as consent to participate in this research study. This was communicated to the participants in the cover letter.

Findings

Statistical analyses (descriptive) were conducted. Generally, the data on barriers was examined using descriptive statistics, and data were reported using percentages. The

sample of this study was registered nurses working in a public hospital in Saudi Arabia. Copies of the surveys were distributed to a total of 600 RNs. A total of 500 questionnaires were returned. Among these returned questionnaires, 55 were excluded because they had missing responses on more than one complete section of the questionnaire. The total response rate for this study was 83%. The results of demographic data analysis were obtained from 445 subjects. The majority of nurses were female (91%). The age of respondents ranged from the 20's to the 60's; the most common age range was 26 to 30 years (28.9%) while 36 to 40 was 23%. Only 21% were 31 to 35 and 11% were 41 to 45. Also 12% were 46 to 60 and 5% were 20 to 25. Regarding the education level of the participants, there was a large number of baccalaureate degree nurses (55 %). Less than 41% of nurses had an associate degree and 1% had a master's degree. With regard to the length of time nurses worked in the nursing profession, 39% worked six to ten years, 21% worked eleven to fifteen years, 21% worked between one to five years, 12% worked between sixteen to twenty years, and 5% worked more than 21 years. And only 1% worked less than one year. The staff positions of the participants included staff nurses 83.8%, charge nurses 9%, head nurses 2.2%, hospital directors 4%, and educators 2%.

Regarding the place of work; 26% of the participants were working in the maternity department, 11% in the medical / surgical department, 9% in the critical care unit, 8% in the pediatric department, 3% in the oncology unit, 15% floating between departments, and 14% in the neuroscience and the cardiac unit, respectively.

When respondents were asked whether they are enrolled in any professional development activities at the moment, from the sample of the present study investigated, 18.2% had enrolled and 81.8% had not enrolled.

When respondents were asked about the types of CPD activities provided at their place of work; 96% stated that they have in-service education programs, 94% reported having workshops and courses, 78% had in house seminars and symposiums, while only 18% reported having financial support to attend seminars/workshops outside the organization.

94.9% of the participants were familiar with CPD. The majority, 77.3% preferred the announcements of CPD activities through e-mail/ intranet, followed by the poster/flyers with 59.9%. In addition to that, the result showed that 79.5% of the sample attended the educational activities based on the board requirements. The study revealed the following as the three major barriers affecting the participants ability to attend the professional activities, were 38.2% agree that financial support was the major barrier, followed by the commitment/ scheduling problems to attend the educational activities with a percentage of 29.7%, and finally the ability to attend the class regularly with 19.6%.

According to the results of the present study, the majority of the participants were working in the maternity department, secondly came the neuroscience and cardiac units, respectively, then the medical / surgical department and critical care unit and finally the pediatric unit. By interpreting these results, it could be assumed that these departments and units require having nursing staff that are well educated, highly competent, and who have suitable experience, in order to identify their continuous learning needs and finally plan their work effectively, in accordance with CPD objectives at their organization.

This goes well with the previous studies of Levett-Jones, (2005); and Penz, D'Arcy, Stewart, Kosteniuk, Morgan, & Smith, (2007) that were cited in this paper.

Most respondents showed an understanding of the concept of CPD as a part of continuous lifelong learning. This agrees with the previously cited literature of Price, Akpanudo, Dake, and Telljohann (2004). Study revealed that for respondents enrolled in professional development activities at the moment, from the sample of the present study investigated; only 18.2% had reported a form of enrollment. This finding could mean that nurses' perception around the meaning of CPD is restricted within the margins of improving the service towards the patients rather than improving their competencies. In addition, this could mean that nurses are not motivated to undertake such CPD opportunities either due to lack of administration support and reward or not having enough time for it. Such findings were reported in studies done by Yfantis, Tiniakou, and Yfanti (2010), Ward & Wood (2000), Beatty, (2001), Bahn, (2007) and Penz et al., (2007).

Most expressed opinions were in agreement with previous research findings (Ward & Wood, 2000, Beatty, 2001, Lee, Tiwari, Choi, Yuen, and Wong, 2005), indicating barriers such as shortage of staff and heavy work load. Similarly, night duty nurses were at a disadvantage because most CPD activities are conducted during daytime hours. Findings also indicated nurses' appreciation of the role of CPD in improving their performance as enhancing patient care and in career development as evidenced in the previous studies of Levett-Jones, (2005), and Penz, D'Arcy, Stewart, Kosteniuk, Morgan, & Smith, (2007).

Implications and Recommendations

There are several implications of the study findings. Nurse educators can help nurses to remain competent by developing CE programs that are cost-efficient and convenient for nurses. This could include offering CE programs during break hours. Nurse educators might need to travel to present information. Online or webcast classes could be offered either synchronously or

asynchronously to be accessed via distance learning. Nurse educators need to participate on committees that plan CE opportunities. Employers must take responsibility for providing compensated or uncompensated time for nurses to attend CE offerings.

The following recommendations could be considered in developing CPD classes:

- Staff development coordinators are advised to assess learning needs, and CPD activities should be outcome driven and patient centered.
- Creation of a supportive atmosphere in the clinical environment that promotes CPD activities
- Planning CPD activities should be done in consultation with the target group.

Conclusion

More effective methods and procedures are needed to address barriers, such as time, travel, access, funding, and quality of continuing education programs (Penz et al., 2007). Health care institutions, professional bodies, and professionals need to be informed and updated as to what is needed in creating and sustaining CPD efforts through practice, education, and research. Bridging the gap between practice, theory, and research will result in developing CPD programs that are of primary importance to exhibit the effect of continuing education on nursing competence and patient outcomes, as well as to confirm the effect of CPD on nurse retention and job satisfaction.

Educators should provide accessibility to professional development and use various advertising methods to encourage participation. Given the fact that nurses are truly committed to patient care, should learning activities be brought to them, at the bedside? Bringing these activities to the unit or bedside would negate potential concerns of cost and patient

responsibility, and encourage nurses to participate in professional development programs. Researchers reported that attending CE classes resulted in increasing job satisfaction (Kubsch et al., 2003), decreasing burnout (Espeland, 2006; Kubsch et al., 2003), and updating skills (Slusher et al., 2000; Wood, 2006).

The information learned from this study has been valuable for identifying barriers to obtaining further education and could be used to assist in developing CPD programs. Attending CE opportunities help to keep nurses current on nursing advances. This study underlined several barriers that prevent some nurses from attending CE offerings. Further work to address these barriers to participation must be followed. Barriers to participation must be analyzed and understood by nursing education developers to provide meaningful learning opportunities for nurses.

References

American Nurses Association. (2004). *Nursing: Scope and standards of professional practice*. Silver Spring, MD: Author.

Arcand, L., and Neumann, J. (2005). Nursing competency assessment across the continuum of care. *J Contin Educ Nurs*, 36(6), 247-54.

Bahn, D. (2007). Orientation of nurses toward formal and informal learning: Motives and perceptions. *Nurse Education Today*, 27(7), 723-730.

Beatty, R. M. (2001). Continuing professional education, organizational support, and professional competence: Dilemmas of rural nurses. *The Journal of Continuing Education in Nursing*, 32(5), 203-209.

Cho, S. Berge, Z. (2002). Overcoming Barriers to Distance Training and Education. *Education at a Distance*. The USDLA Journal 16(1).

Cooper, A. (1997). Responding to poor inservice attendance. *Canadian Nurse*, 93(4), 26-30.

Davies, C. et al (1990), *Collapse of the Conventional Career: The Future of Work and its Relevance for Post registered education in Nursing, Midwifery and Health Visiting*. London, English National Board. ISBN: 0-946810-24-9.

Espeland, K. (2006). Overcome burnout: How to revitalize your career. *The Journal of Continuing Education in Nursing*, 37(4), 178-184.

Incorvaja, J. (1999), *A Comparative Study of Educational Attitudes Between First, Second and Third Level Nurses Working in Psychiatric Practice in Malta*. Institute of Healthcare. University of Malta.

International Council of Nurses (2000), *the ICN Code of Ethics for Nurses*. ICN. Joint Commission International (2003), *Joint Commission International Accreditation Standards for Hospitals*. 2nd edition. Joint Commission International.

Kubsch, S., Henniges, A., Lorenzoni, N., Eckardt, S., & Oleniczak, S. (2003). Factors influencing accrument of contact hours for nurses. *The Journal of Continuing Education in Nursing*, 34(5), 205-212.

Lee, A. C. K., Tiwari, A. F. Y., Choi, E. W. H., Yuen, K. H., & Wong, A. (2005). Hong Kong nurses' perceptions of and participation in continuing education. *The Journal of Continuing Education in Nursing*, 36(5), 205-212.

Levett-Jones, T. L. (2005). Continuing education for nurses: Necessity or nicety? *The Journal of Continuing Education in Nursing*, 36(5), 229-233.

Morgan, A., Cullinane, J., Pye, M. (2008). Continuing Professional Development: rhetoric and practice in the NHS. *Journal of education and work*, 21, 233-248.

Nalle, M., Wyatt, T., and Myers, C. (2010). *Continuing Education Needs of Nurses in a Voluntary Continuing Nursing Education State*. The Journal of Continuing Education in Nursing, 41(3).

- National Council for the Professional Development of Nursing and Midwifery (2004), Report on the Continuing Professional Development of Staff Nurses and Staff Midwives. National Council for the Professional Development of Nursing and Midwifery.
- Penz, K., D'Arcy, C., Stewart, N., Kosteniuk, J., Morgan, D., & Smith, B. (2007). Barriers to participation in continuing education activities among rural and remote nurses. *The Journal of Continuing Education in Nursing*, 38(2), 58-66.
- Price, J., Akpanudo, S., Dake, J., & Telljohann, S. (2004). Continuing education needs of public health educators: Their perspectives. *Journal of Public Health Management and Practice*, 10(2), 156-163.
- Scanlan, C. L., & Darkenwald, G. G. (2004). Identifying deterrents to participation in continuing education. *Adult Education Quarterly* 34, 155-166.
- Schweitzer, D., and Krassa, T. (2010). Deterrents to Nurses' Participation in Continuing Professional Development: An Integrative Literature Review. *J Contin Educ Nurs*, 41(10), 441-447.
- Slusher, I. L., Logsdon, M. C., Johnson, E., Parker, B., Rice, J., & Hawkins, B. (2000). Continuing education in nursing: A 10-year retrospective study of CE offerings presented by the Kentucky Nurses Association. *The Journal of Continuing Education in Nursing*, 31(5), 210-223.
- Tranter, S., Westgarth, F., Kemp, J., & Macneil, J. W. H. (2010). Interprofessional education: Implications for nephrology care. *Ren Soc Aust J*, 6(2), 67-75.
- Ward, J & Wood, C. (2000), Education and Training of Healthcare Staff: the Barriers to its Success. *European Journal of Cancer Care* 9, 80-85.
- Wood, J. (2006). Exploring staff nurses' views on professional development. *Nursing Times*, 102(13), 36-38.
- Yfantis, A., Tiniakou, I., and Yfanti, E. (2010). Nurses' attitudes regarding Continuing Professional Development in a district hospital of Greece. *Health Science Journal*, 4(3).

