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FROM THE EDITOR



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DUTY-NIGHTS EMERGENCY WORKLOAD OF AN OBSTETRIC AND GYNECOLOGICAL TEAM. THE EXPERIENCE OF QAMH IN JORDAN

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Introduction

There is a major workload done over nights by the obstetric and gynecology on call team, that is every duty night from 4.00 pm to the next morning at 8.00 am. We have two emergency rooms in every obstetric and gynecology department's out patients emergency room which deals mainly with gynecological problems like vaginal bleeding, acute abdominal pain, vaginal infections, and some acute medical and surgical problems affecting pregnant women. The 2nd one is the labour emergency room where we deal with emergency obstetrical cases beyond 28 weeks gestation. The main gynecological emergency cases are related to abnormal vaginal bleeding.

This study aims to evaluate the bulk of emergency cases we face during duty nights in numbers and related to quality and severity of cases, in order to determine the proper number of senior and junior residents that is best to be available each duty, and to provide the best training programs for them so that they can deal with such cases.

Patients and Methods

Queen Alia Hospital is a teaching tertiary hospital, with 300 beds. The obstetric and gynecological department contains 32 beds, with 6 beds for labour. Each duty involves one junior resident, one 2nd or 3rd year resident and one senior resident, covered by a specialist first on call and consultant. This team deals with all emergency calls and all inpatient cases. This hospital serves a large number of populations. Patients come from the local city Amman and from Zarqa, Mafraq, Jerash, Ajloun and many come from remote areas.

The operation theatre is available and ready for emergency cases 24 hours daily.

Abstract

Background: to evaluate and study the overnight emergency workload of the obstetric and gynecological team on call in order to guide a plan for better medical services.

Patients and Methods: Over a 6 months period of time in Queen Alia teaching hospital, we analyze the number of patients who were seen during the on calls nights starting from 4.00 pm till 8.00 am next morning. Recorded data includes timing of call, diagnosis of cases, operations and outcomes.

Results: A total of 3,521 patients were managed during overnight on call duties during 6 months. Most of the calls apart from deliveries and caesarian sections were due to abdominal pain due to ovarian cyst as the most specific diagnosis, non-specific vaginal bleeding, then exaggerated signs and symptoms of pregnancy, and trauma, like falling down during pregnancy. Emergency evacuation and curettage was the highest number of surgical interventions dealt with during nights.

Conclusion: A major work load is dealt with during on call duties, especially by the obstetric and gynecological

team. During these nights we deal with different kinds of hot and cold cases in obstetric and gynecology unit. Such a burden sometimes requires transferring patients from one hospital to another due to lack of beds, and sometimes for the lack of incubators in the neonatal intensive care unit, in cases of premature emergency deliveries. That is why our prospect is to have a specialized hospital for obstetrics and gynecology, along with an adequate number of residents, trained well to deal with different cases and this huge workload.

Key words: vaginal bleeding, on-call, work load, emergency, night duties

This study was done by the obstetric and gynecological specialist and data was collected from special registrations records available at the obstetric and gynecological department, emergency room and at the theatre.

Results

During the period from June 2011 till September 2011, 3,521 patients were seen from 4.00 pm till 8.00 am next morning.

Most of the calls were at 600 pm.

Out of a total of 224, 49.1% of calls were of abdominal pain, with acute ruptured ovarian cyst being the most common specific pathology in 41 (9.0%) patients. 73 (16.0%) calls were received for dysfunctional vaginal bleeding. Apart from the Accident and Emergency department, 40 (8.8%) calls were received from other units. A total 131 (28.7%) patients were admitted in the obstetric and gynecological department for urgent operation or observation while 212 (46.5%) patients were discharged. 92 patients were referred to other units with medical referral accounting for 45 (9.8%) patients.

A total 104 emergency surgeries were performed with dilatation and curettage being the most common procedure in 34 (32.7%) patients followed by cesarean section in 27 (26.0%) and laparotomy in 21 (20.2%) patients.

Discussion

Emergency cases form the major workload of an obstetric and gynecological department. Little accurate quantitative data is available at present regarding the nature and impact of emergency obstetrical call workload in tertiary care public teaching hospitals. This study highlights the disease pattern encountered by an on-call team.

Results of this study showed that the majority of patients (49.1%) presented to the obstetric and

gynecological unit as an emergency, were suffering from acute conditions of the abdomen. In our study also, the most frequent specific diagnosis made is miscarriage.

Urgent surgical procedures were carried out in 104 (22.8%) patients, dilatation and curettage being the most frequent operation performed.

For all patients who presented with abdominal pain, call was given to the on-call obstetric and gynecological unit without doing proper resuscitation and initial work up. This increased the substantial workload on the on-call team, whose work now not only included the management of genuine surgical emergencies but also doing investigation and proper referral to other units.

Apart from examining the on-call workload of surgical residents, an assessment of on-call activity is needed to maximize educational merit of our obstetric and gynecological residents.

Conclusion

The major workload of an on-call surgical emergency team deals with the acute conditions of abdomen with dilatation and curettage being the most frequent operation performed. A substantial proportion of patients, however, suffer from other conditions including vaginal bleeding, that requires a holistic approach to care and a wide range of skills and experience that may cross subspecialty and specialty divisions.

The results of this study are helpful in planning better emergency service delivery to patients and in focusing and improving the training of obstetric and gynecological residents. There is a need for a structured training program for emergency surgery of obstetric and gynecology residents especially revolving around these common pathologies and their operative managements. Government at

various levels should provide modern diagnostic tools for the accurate preoperative diagnosis of surgical emergencies in tertiary care hospitals. These measures will help to improve the management and outcome of surgical emergencies.

References

1. Masiira-Mukasa N, Ombito BR. Surgical admissions to the rift valley provincial general hospital, Kenya. *East Afr Med J.* 2002;79:373-8. [PubMed: 12638833]
2. Capewell S. The continuing rise in emergency admissions. *BMJ.* 1996;312:991-2. [PMCID: PMC2350854] [PubMed: 8616382]
3. Campbell WB, Lee EJ, Van de Sijpe K, Gooding J, Cooper MJ. A 25-year study of emergency surgical admissions. *Ann R Coll Surg Engl.* 2002;84:273-7. [PMCID: PMC2504250] [PubMed: 12215033]
4. Al-Mulhim AA. Emergency general surgical admissions: Prospective institutional experience in non-traumatic acute abdomen: Implications for education, training and service. *Saudi Med J.* 2006;27:1674-9. [PubMed: 17106539]
5. Dawson EJ, Paterson-Brown S. Emergency general surgery and the implications for specialisation. *Surgeon.* 2004;2:165-70. [PubMed: 15570820]
6. Lankester BJ, Britton DC, Holbrook AG, Umpleby HC, Tate JJ, Budd J, et al. Emergency surgery: Atavistic refuge of the general surgeon? *J R Soc Med.* 2001;94:180-2. [PMCID: PMC1281389] [PubMed: 11317620]
7. Jones PF. Suspected acute appendicitis: trends in management over 30 years. *Br J Surg.* 2001;88:1570-7. [PubMed: 11736966]
8. Chianakwana GU, Ihegiu CC, Okafor PI, Anyanwu SN, Mbonu OO. Adult surgical emergencies in a developing country: The experience of Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria. *World J Surg.* 2005;29:804-7. [PubMed: 1588028]

9. Davies MG, Shine MF, Lennon F. Surgical emergencies in Ireland: An audit of the emergency surgical caseload of an Irish district general hospital. *Ir J Med Sci.* 1991;160:303-6. [PubMed: 1810893]
10. American College of Surgeons. *ATLS Handbook.* Chicago, IL: ACS; 1990.
11. Royal College of Surgeons of England. A Joint Report from the Royal College of Surgeons of England and the British Orthopaedic Association. London: RCS; 2000. *Better Care for the Severely Injured.*
12. Bain IM, Kirby RM, Cook AL, Oakley PA, Templeton J. Role of the general surgeon in a British trauma centre. *Br J Surg.* 1996;83:1248-51. [PubMed: 8983619]
13. Dattani RG, Richards T, Smith CD, Magee TR. Trauma calls: Role of the general surgeon and CT scanning. *Emerg Med J.* 2005;22:339-41. [PMCID: PMC1726760] [PubMed: 15843701]
14. Borley NR, Steer SE, Collins RE. 'Unseen' on-call workload of a general surgical team. *Ann R Coll Surg Engl.* 1995;77:189-90. [PubMed: 7574341]
15. Dookeran KA, Thompson MM, Lloyd DM, Everson NW. Audit of general practitioner referrals to an acute surgical unit. *Br J Surg.* 1992;79:430-1. [PubMed: 1596726]
16. Morton JM, Baker CC, Farrell TM, Yohe ME, Kimple RJ, Herman DC, et al. What do surgery residents do on their call nights? *Am J Surg.* 2004;188:225-9. [PubMed: 15450824]
17. Tendulkar AP, Victorino GP, Chong TJ, Bullard MK, Liu TH, Harken AH. Quantification of surgical resident stress "on call" *J Am Coll Surg.* 2005;201:560-4. [PubMed: 16183494]

THE EFFECT OF PROPHYLACTIC ANTIBIOTICS ON THE INCIDENCE OF SURGICAL SITE INFECTION AMONG WOMEN AFTER BREAST CANCER SURGERY

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Introduction

Prevention of postoperative wound infections is of great concern in surgery, so that the antimicrobial prophylaxis is used to reduce the incidence of surgical site infection (1, 2, 3).

Preoperative antibiotic prophylaxis is defined as parenteral antibiotic administered any time on the day of surgery before the end of the procedure(4). The value of antibiotic prophylaxis in the reduction of post-operative infection rate is well established in clean-contaminated procedures, and it is considered optional for most clean procedures (5). Also nurses play a vital role in the reduction of SSIs; through patient education about strategies to reduce risk factors, and ensure antibiotic prophylaxis is given.

Surgical site infection (SSI) is a form of postoperative complication that contributes significantly to morbidity and mortality in healthcare today and also has an enormous impact on patients' quality of life and contributes substantially to the financial cost of patient care (6). SSI is considered as the third most common type of health care associated infection, and accounts for approximately 38% of all infections in the surgical patient population (7). Every year 30 million surgical procedures are performed throughout the United States and at least 2% are complicated by SSIs (8).

Infection rates for surgical treatment of breast cancer are documented between 1.9 and 50% (9, 10). The accepted rate for wound infections after clean operations such as breast cancer is approximately 1.5 % (11, 12). These surprisingly high rates of postoperative infections after breast surgery provide the impetus for consideration of antibiotic prophylaxis even though breast operations are considered clean.

Abstract

Prevention of postoperative wound infections is of great concern in surgery, so that the antimicrobial prophylaxis is used to reduce the incidence of surgical site infection. The value of antibiotic prophylaxis in the reduction of post-operative infection rate is well established in clean-contaminated procedures, and it is considered optional for most clean procedures. Surgical site infection (SSI) is a form of postoperative complication that contributes significantly to morbidity and mortality in healthcare today and also has an enormous impact on patients' quality of life and contributes substantially to the financial cost of a patient. Infection rates for surgical treatment of breast cancer are documented between 1.9 and 50%. The accepted rate for wound infections after clean operations such as breast cancer is approximately 1.5 %. These surprisingly high rates of postoperative infections after breast surgery provide the impetus for consideration of antibiotic prophylaxis even though breast operations are considered clean.

Currently there is no consensus on prophylactic antibiotics use in breast cancer surgery, and still there are different practices that exist among surgeons within the same department. In addition increased antibiotic use may lead to antibiotic resistance, so that generating a very strong yes and no is still unreachable.

Postoperative breast infections should be considered unique for several reasons; wound infections after breast surgery may result in severe consequences, significant psychological trauma and delay in receiving adjuvant chemotherapy or radiotherapy (13). These unique consequences also make any attempt to reduce infection rate an important goal.

Currently there is no consensus on prophylactic antibiotics use in breast cancer surgery (14, 15, 16), and still there are different practices that exist among surgeons within the same department. In addition increased antibiotic use may lead to antibiotic resistance (17, 18), so that generating a very strong yes and no is still unreachable.

Based on what has been mentioned before, the aim of this review is to provide an overview of the available evidence regarding the efficacy, safety and the outcomes of prophylactic antibiotics in breast surgery.

Significance

Breast cancer accounts for one in eight of all new cancer cases diagnosed worldwide (19). Furthermore, there were 926 breast cancer cases among Jordanian women accounting for 36.8% of all newly diagnosed cancer cases (20). Surgical removal of the breast has been a golden measure treatment approach for centuries even for early stages of breast cancer (21); however any surgical procedure has the potential risk of infection.

Despite the fact of advancing practices in infection control, SSI still cause a substantial morbidity and mortality rate among hospitalized patients and contribute to increased hospitalization and increased consumption of resources and costs (22, 8, 23, 24, 25, 12). This makes the prevention of SSIs a very serious matter. The surprisingly high rates of postoperative infections after breast surgery provide the impetus for consideration of antibiotic

prophylaxis even though breast operations are considered clean.

Objective of the Review

The objective of this review is to identify the effect of prophylactic antibiotics on the incidence of SSI among women after breast cancer surgery.

PICO Summary

P - Patient population of interest: Women after breast cancer surgery; female with breast cancer patients, age more than 18 and less than 65, patients who were diagnosed with breast cancer and had to undergo breast surgery

I - Intervention of interest: patient received Prophylactic antibiotics.

C - Comparison of interest: Incidence of SSI of women who received prophylactic antibiotics and who didn't receive prophylactic antibiotics.

O - Outcome of interest: Reduce of SSI rate.

The clinical question was formulated: Is prophylaxis antibiotic (INTERVENTION) effective in preventing postoperative wound infection (OUTCOME) among patients undergoing breast cancer surgery (PATIENTS)?

Methods and Results

To come up with valid evidence and articles, research articles for this review were obtained by computerized searches conducted through searching "Science Direct", "Cochrane database", "Pub Med", and "EBSCOhost" databases in March 2012.

Search strategy was formulated using the following MESH (Medical Subject Headings) terms: antibiotic prophylaxis, perioperative prophylaxis, clean surgery, breast surgery, lumpectomy, auxiliary lymph node dissection, mastoplasty, postoperative complications and wound infection. The search was limited from 2006 to 2012. Abstracts were screened for relevance, and publications relating to humans

were obtained. Additional reports were identified from the reference lists of retrieved reports and from review articles. Unpublished reports and abstracts were not considered, and authors were not contacted. The search was limited to English language, human kind, research based articles and integrative literature review. To be included, the article had to meet the following criteria: (1) the study is performed in adults, (2) prophylactic antibiotic is administered before surgery, (3) prophylactic antibiotics treatment is evaluated, and (4) it is an original article (duplicates and reviews are excluded). There was no restriction on the type of report or the design of the study. The levels of evidence have been stratified according to accepted guidelines (Table 2), and these have been applied to both the evidence and the conclusions. This paper considers the significant levels for research, and the search excludes any study with $P > 0.05$.

Results of search

With the literature search, a total of 15 articles were identified, and after exclusion of duplicates the review utilized eight articles which met the inclusion criteria. Most retrieved articles had a high quality methodological design. Level of evidence and rating system for the Hierarchy mentioned in Table three (See Table 3 - next page). Five articles of eight include systematic review level 1 (see Table 2 - next page). Two of the eight articles included were well designed cohort non-comparative observational studies and anecdotal reports about prophylactic antibiotics (level III).

The remaining article was case opinion of respected authorities based on clinical experience (level IV). The eight studies describe patients receiving prophylactic antibiotics before breast surgery in the period 1994 up to 2012. (See Appendix, Table 1)

Data Analysis

The use of prophylactic antibiotics in preventing infection is still a controversial issue and their routine

	Year	Level of evidence
Bunn, Jones, Bell-Syer Update Review	2012	I
Cunningham,Bunn,and Handscomb	2009	I
Cunningham,Bunn,and Handscomb	2006	I
Tejirian, DiFronzo and Haigh	2006	I
Xue, Qian And Yang, Wang	2012	I
Olsen, Lefta, Dietz, Brandt, Aft, Matthews, Mayfield, and Fraser	2008	III
Darren Ng, Trivedi,. Sharma, Banerjee	2006	IV
Nicolash, Yazdan, Pierre, Stephanie, Sylvia, Charles , Danie'le, Charles, and Jacques	2007	III

Table 2

Level 1	Systematic review or meta-analysis of all relevant randomized controlled trials (RCTs), or evidence-based clinical practice guidelines based on systematic reviews of RCTs
Level 2	Evidence from at least one well-designed RCT
Level 3	Evidence from a well-designed controlled trial without randomization
Level 4	Evidence from well-designed case-control and cohort studies
Level 5	Evidence from systematic reviews of descriptive and qualitative studies
Level 6	Evidence from a single descriptive or qualitative study
Level 7	Evidence from the opinion of authorities and / or reports of expert committees

Table 3

use is not common in breast cancer surgery (15, 16, 26). The clinical trials supporting the use of prophylaxis include both those involving "clean-contaminated" procedures such as colorectal surgery, and those involving extensive clean procedures requiring implantation of prosthesis such as hip arthroplasty and cardio-thoracic surgery (27).

This review found that pre-operative antibiotics significantly reduce the risk of surgical site infection in people undergoing surgery for breast cancer when compared with placebo or no treatment. A moderate level of evidence cohort study (level III) was conducted by Nicolas et al. (2007); 542 patients were enrolled; they

compared the incidence of wound infection between two groups who underwent breast surgery. Before administration of prevention strategy, the incidence rate of infection was 3.5%. After administration of cefuroime before breast surgery to those patients, the incidence was 0.8%. The results were highly significant to reduction of infection rate score $P < 0.003$. The results were congruent with Olsen (2008) (28) which is a retrospective case control study (level III) with 278 patients enrolled.

The two studies are moderate in terms of the evidence level, with level III evidence, since two studies are cohort non-comparative observational studies and anecdotal

reports about prophylactic antibiotics, which have intervention, but there is no randomization, which affects the results, because randomization is a major method to control confounding variables. The sample size in the two studies was adequate according to variables. Inclusion criteria for the studies were identified clearly to avoid selection bias; they considered age of participants, their status of health, and their willingness to participate in the studies was obtained by consent form.

Furthermore, approval from the institutional review board was obtained. These studies should be repeated using the strongest study design as a randomized clinical trial.

In order to prove the benefit of preoperative antibiotic prophylaxis in clean elective breast surgery, an updated well designed systematic review (level I) published in 2012 by (29) Xue, Qian and Yang Wang; including 681 cases and 2064 controls were eligible, found that prophylactic antibiotic had not shown statistical significance. On the other hand, three systematic reviews which are of high quality methodological design (level I), were reviewed. They included 2260 participants in surgical procedures of the breast done in 2006, 2009 and 2012 by Bunn, Jones, Bell-Syer, Cunningham and Handscomb. These reviews including nine studies of a randomized control trial; evaluated preoperative antibiotic compared with no antibiotic or placebo. Pooling of the results demonstrated that prophylactics administered preoperatively significantly reduced the incidence of SSI for patients undergoing breast cancer surgery with (pooled RR 0.72, 95% CI, 0.53 to 0.97), thus concluding that antibiotic prophylaxis significantly reduces the risk of postoperative wound infection following clean elective breast surgery. However the review is not able to establish which antibiotic is the most appropriate. No trials were found which considered immediate breast reconstruction. The results were congruent with systematic review done by Tejirian, DiFronzo and Haigh (2006) including 1,307 patients.

After deep analysis of the results of five systematic reviews (level I) evidence; the most reliable results are those supporting use of the prophylactic antibiotics in breast surgery, because the reviews are updated (2006-2012) and four of five systematic reviews provide consensus for the usage of antibiotics and large sample size which can make them more generalizing to the result.

Conclusion

There is adequate evidence to support using preoperative prophylactic antibiotics to reduce the risk of a SSI in people undergoing breast cancer surgery.

Recommendation

Use of prophylactic antibiotics in breast surgery is associated with a significant reduction in SSI and should be considered in patients undergoing breast surgery. Antibiotic prophylaxis is one of the interventions that are recognized as a primary strategy in prevention of SSIs and would be helpful if put into place to change practice.

Developing Processes based on such things as electronic health records or computerized charting will assist in prompting real compliance with these important outcomes. These strategies and additional research will continue to inform the healthcare field on prevention of SSIs and thus improve the surgical care of patients.

Further studies are needed to determine the optimum timing, dose and dosage schedule for antibiotic prophylaxis in breast surgery and to compare the effectiveness of different antibiotics. Enrich the educational level of the oncology nurses by specialized training of staff who are usually in contact with the breast cancer survivors through updating references.

References

- 1- Gruendemann BJ, Magnum S. (2001). Infection prevention in the surgical setting. London: W. B. Saunders.
- 2- Majoribanks J, Jordan V, Callis K(2004). Antibiotic prophylaxis for elective Hysterectomy (protocol). Cochrane Database of Systematic Reviews, Issue 1. [DOI: 10.1002/14651858.CD004637]
- 3- Scottish Intercollegiate Guidelines Network (SIGN). (2005). Antibiotic Prophylaxis in Surgery section 3: benefits and risks of antibiotic prophylaxis. <http://www.sign.ac.uk>.

- Scottish Intercollegiate Guidelines Network, (accessed 27 March 2001).
- 4- Codamos, L., Catungal, M., Coronel, R. (1999). Antibiotic prophylaxis for breast surgery: a meta-analysis of randomized placebo controlled trials. *Phillippine Journal of Surgical Specialties*; 55(1):30-32.
 - 5- Condon, R.E., Wittmann, D.H. (1991). The use of antibiotics in general surgery. *Curr Probl Surg*, 28:803-907.
 - 6- Leaper, D. J (2010). Surgical-site infection. *Br J Surg*, 97: 1601-1602. doi: 10.1002/bjs.7275
 - 7- Neumayer, L., Hosokawa, P., Itani, K., El-Tamer, M., Henderson, W., & Khuri, S. (2007). Multivariable predictors of postoperative surgical site infection after general and vascular surgery: results from the patient safety in surgery study. *Journal of the American College of Surgeons*, 204, (6), 1178-1187
 - 8- Bratzler, D. W., Carr, K., Dellinger, E. P., Fry, D. E., Houck, P. M., Red, L., Richards, C., Steele, L., & Wright, C. (2005). Use of Antimicrobial Prophylaxis for Major Surgery. *Archives of Surgery*, 140, 174-182.
 - 9- Nicolas, P., Yazdan, Y., Marie-Pierre, C., Stéphanie, C., Sylvia, G., Jean-Charles, N., Danièle, L., Charles, F. and Jacques, B. (2007). Prevention of surgical site infection after breast cancer surgery by targeted prophylaxis antibiotic in patients at high risk of surgical site infection. *J. Surg Oncol.*, 96: 124-129. doi: 10.1002/jso.20796
 - 10- Witt A, Yavuz D, Walchetseder C, Strohmer H, Kubista E. (2003) Preoperative core needle biopsy as an independent risk factor for wound infection after breast surgery. *Obstetrics & Gynecology*; 101(4):745-50.
 - 11- Cruse, P., Foord, R. (1980). The epidemiology of wound infection. A 10-year prospective study of wounds. *Surg Clin North Am*, 60:27-40.
 - 12- Tejirian, T., DiFronzo, L.A., & Haigh, P.I. (2006). Antibiotic Prophylaxis for Preventing Wound Infection after Breast Surgery: A Systematic Review

- and Metaanalysis. *Journal of the American College of Surgeons*, 203(5):729-34.
- 13- Darren, Ng., Prateesh, M., Trivedi, K., Sharma, A., & Banerjee, A. (2006). Current use of antibiotic prophylaxis in breast surgery: a nationwide survey. *Breast (Edinburgh, Scotland)*, 16(1):68-72.
- 14- Bunn, F., Jones, D.J., Bell-Syer, S. (2009). Prophylactic antibiotics to prevent surgical site infection after breast cancer surgery. *Cochrane Database of Systematic Reviews*. CD005360. DOI: 10.1002/14651858.CD005360.pub3.
- 15- Bunn, F., Jones, D.J., Bell-Syer, S. (2012). Prophylactic antibiotics to prevent surgical site infection after breast cancer surgery. *Cochrane Database of Systematic Reviews*. CD005360. DOI: 10.1002/14651858.CD005360.pub3.
- 16- Cunningham, M., Bunn, F., Handscomb, K. (2006). Prophylactic antibiotics to prevent surgical Site infection after breast cancer surgery. *Cochrane Database Syst Rev*; (2): CD005360
- 17- Barbosa, T. M. & Levy S. B. (2000). The impact of antibiotic use on resistance development and persistence. *Drug Resistance Updates*, 3(5): 303-311.
- 18- Levy, S. B & Marshall, B (2004). "Antibacterial resistance worldwide: causes, challenges and responses." *Nat Med*. 12
- 19- National Cancer Institute (2009). The NCI strategic plan for leading the nation to eliminate the suffering and death due to cancer. URL <http://strategicplan.nci.nih.gov/>
- 20- Jordan Cancer Registry. (2009). Cancer incidence in Jordan 2009, 11.
- 21- Donegan, W. Spratt, J. (1995), *Cancer of the breast*. Missouri: Elsevier Science.
- 22- Bratzler, D. & Hunt, D. (2006). The surgical infection prevention and surgical care improvement projects: National initiatives to improve outcomes for patients having surgery. *Clinical Infectious Disease*, 43, 322-330.
- 23- Bratzler, D., & Houck, M. (2004). Antimicrobial Prophylaxis for Surgery: An Advisory Statement from the National Surgical Infection Prevention Project. *Clinical Infectious Disease*, 38, 1706-1715.
- 24- Cheadle, W. (2006). Risk factors for surgical site infections. *Surgical Infections*. 7, (Suppl. 1), S7-S12.
- 25- Khuri, S, Daley J., Henderson W., Barbour, G., Lowry, P., Irvin, G., et al. (1995). The national veterans administration surgical risk study. Risk adjustment for the comparative assessment of the quality of surgical care. *Journal of American College of Surgeons*, 180, 519-531.
- 26- Sheridan, L. Tompkins, G. Burke, F. (1994). Prophylactic antibiotics and their role in the prevention of surgical wound infection. *Advances in Surgery. Year Book Medical*, 43-65.
- 27- Kaiser, AB., Petracek, M., Lea, JW, et al. (1987). Efficacy of cefazolin, cefamandole and gentamicin as prophylactic agents in cardiac surgery: results of a prospective, randomized, double-blind trial in 1030 patients. *Ann Surg*; 206:791-797. 13
- 28- Olsen MA, Lefta M, Dietz JR et al (2008). Risk factors for surgical site infection after major breast operation. *J Am Coll Surg* ,207(3): 326-35.
- 29- Xue, D., Qian, C., Yang, L., Wang, X. (2012). Risk factors for surgical site infections after breast surgery: A systematic review and meta-analysis. *Eur J Surg Oncol* ;38(5):375-81.

Source (Authors, year)	Objective	Main outcome Variable(s)	Design	Setting	Sample	Intervention (if Applicable)	Data Collection Tools	Main Results	Level of the Evidence
Bunn, Jones, Bell-Syer (2012)	Effects of prophylactic antibiotics on the incidence of surgical site infection (SSI) after breast cancer surgery.	The incidence of surgical site infection (SSI) as dependent variable (DV). Prophylactic antibiotic as independent variable (IDV).	Systematic review (randomized control trials)	Not clear stated. The authors from UK, but the studies not well described.	2260 participants	preoperative antibiotic versus placebo or no antibiotic	Two review authors examined the title and abstracts of all studies identified by the search strategy.	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer	I
Bunn, Jones, Handscomb (2009)	Effects of prophylactic antibiotics on the incidence of SSI after breast cancer surgery.	The incidence SSI as (DV) Prophylactic antibiotic as (IDV)	Systematic review (randomized control trials)	Not clear stated. The authors from UK, but the studies not well described.	Total of nine studies (2260) participants	preoperative antibiotic versus placebo or no antibiotic.	Two review authors examined the title and abstracts of all studies identified by the search strategy.	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer Surgery.	I
Darren, Tiwedi., Sharma, Banerjee (2006)	Establish the current practice in perioperative antibiotic use for breast surgery	The incidence of SSI as (DV) current use of antibiotics as (IDV)	National survey	UK	Convenience sample. A total of 266 breast surgeons	None	Questionnaires were sent to 406 breast surgeons, for antibiotic use for common breast procedures. 266 completed	variation in practice for antibiotic prophylaxis in breast surgery reflect lack of reliable evidence for its efficacy	IV

Table 1: Summary (Part 1)

Source (Authors, year)	Objective	Main outcome Variable(s)	Design	Setting	Sample	Intervention (if Applicable)	Data Collection Tools	Main Results	Level of the Evidence
Tejirian, DiFronzo and Haigh 2006	determine the Effects of prophylactic antibiotics on the incidence of SSI after breast cancer surgery	The incidence SSI as (DV) Prophylactic antibiotic as (IDV)	Systematic review (randomized control trials)	Los Angeles	Five studies including 1,307 patients	preoperative antibiotic versus placebo.	Two review authors examined the title and abstracts of all studies identified by the search strategy	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer Surgery.	I
Cunningham,B unn, and Handcomb, 2006	Effects of prophylactic antibiotics on the incidence of SSI after breast cancer surgery.	The incidence SSI as (DV) Prophylactic antibiotic as (IDV)	Systematic review (randomized control trials)	Not clear stated. The authors from UK, but the studies not well described.	2260 participants	preoperative antibiotic versus placebo	Two review authors examined the title and abstracts of all studies identified by the search strategy	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer Surgery.	I
Olsen, Leftin, Dietz, Brandt, Aft, Matthews, Mayfield, Fraser (2008)	Understanding SSI risk factors after breast operation is essential to develop infection- prevention strategies and improve surgical outcomes.	The incidence SSI as (DV) Risk factors as (IDV)	retrospective case-control study	U.S. state of Missouri. Barnes-Jewish Hospital	268 subjects selected from a cohort of mastectomy, breast reconstruction, and reduction surgical patients	None	Medical records of 57 patients with breast SSI and 268 randomly selected uninfected control patients were reviewed.	Suboptimal prophylactic antibiotic dosing is a potentially modifiable risk factor for SSI after breast operation	III

Table 1: Summary (Part 2)

Source (Authors, year)	Objective	Main outcome Variable(s)	Design	Setting	Sample	Intervention (if Applicable)	Data Collection Tools	Main Results	Level of the Evidence
Bunn, Jones, Bell-Syer (2012)	Effects of prophylactic antibiotics on the incidence of surgical site infection (SSI) after breast cancer surgery.	The incidence of surgical site infection (SSI) as dependent variable (DV). Prophylactic antibiotic as independent variable (IDV).	Systematic review (randomized control trials)	Not clear stated. The authors from UK, but the studies not well described.	2260 participants	preoperative antibiotic versus placebo or no antibiotic	Two review authors examined the title and abstracts of all studies identified by the search strategy.	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer	I
Bunn, Jones, Handscomb (2009)	Effects of prophylactic antibiotics on the incidence of SSI after breast cancer surgery.	The incidence SSI as (DV) Prophylactic antibiotic as (IDV)	Systematic review (randomized control trials)	Not clear stated. The authors from UK, but the studies not well described.	Total of nine studies (2260) participants	preoperative antibiotic versus placebo or no antibiotic.	Two review authors examined the title and abstracts of all studies identified by the search strategy.	prophylactic antibiotics reduce the incidence of SSI for patients undergoing breast cancer Surgery.	I
Darren, Trivedi., Sharma, Banerjee (2006)	Establish the current practice in perioperative antibiotic use for breast surgery	The incidence of SSI as (DV) current use of antibiotics as (IDV)	National survey	UK	Convenience sample. A total of 266 breast surgeons	None	Questionnaires were sent to 406 breast surgeons, for antibiotic use for common breast procedures. 266 completed	variation in practice for antibiotic prophylaxis in breast surgery reflect lack of reliable evidence for its efficacy	IV

Table 1: Summary (Part 3)

THE EFFECT OF SHIFT WORK ON PSYCHOLOGICAL STRESS, SLEEP PATTERN AND HEALTH OF NURSES WORKING AT A TERTIARY HOSPITAL, RIYADH

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Introduction

Nursing is a healthcare profession that plays a pivotal role in provision of health care services. Nurses care for individuals of all ages and cultural backgrounds in a holistic manner based on the individual's physical, emotional, psychological, intellectual, social, and spiritual needs.

While there is no doubt that nursing is a wonderful career with many challenges and intensely rewarding experiences, it is also a fact that in their daily work, nurses confront emotional and professional demands that are unimaginable to the wider community. Nurses deal with different needs of patients every day and they are often caught between doctors or supervisors and families or caretakers. All of these for many hours make a heavy burden on nurses particularly those under shift type of work, which gives them an irregular schedule of daily activities including sleep and disturbed family and social life that leads to a potential risk of development of psychological stress and sleep problems especially if there is inadequate psychosocial adaptation to nonstandard time of work (1,2).

Shift work is also believed to disrupt the circadian timing system, which leads to a disharmony within the body and this increases the risk of developing physical problems and health impairment in the workers (3).

Most studies on shift work have used the National Sleep Foundation definition of shift work, which is any type of schedule that falls outside the standard working hours. So this term can be applied to a broad spectrum of non-standard work schedules time ranging from occasional on-call overnight duty, rotating and split shifts, to steady night work (4,5,6).

Gold et al. found that nurses working during night shifts were more likely to fall asleep at work than those

Abstract

Shift work disrupts the circadian timing system and this has been shown to produce significant deleterious symptoms in workers. The aim of our study was to determine the frequency of psychological distress, sleeping disturbance and chronic diseases and access their associations with shift work among nurses.

Methodology: A cross-sectional study was carried out among nurses working in 8-10 hour shifts at King Khalid University Hospital (KKUH). A pre-tested structured questionnaire was randomly distributed to 400 nurses. The main outcome measures were assessment of sleep disturbance using the Epworth Scale, psychological distress using the General Health Questionnaire and presence of chronic diseases and smoking habit among the study participants.

Results: A total of 340 nurses filled and returned the questionnaire. Fifty-nine met our exclusion criteria so eventually 281 nurses were

enrolled in the study. Fifty two percent were psychologically distressed, 27% had high levels of psychological distress, and 14% were found to have sleep disturbances. About 11.5% had hypertension, 7% musculoskeletal problems, 5% migraine, 1.5% diabetes mellitus, 1.5% dyslipidemia, and 6% were smokers. The association between developments of psychological distress, chronic disease and shift work was found to be statistically significant (P- value 0.019 & 0.001 respectively).

Conclusions: Our study concludes that psychological distress and development of chronic diseases were associated with shift work. Strategies have to be developed to help the nurses cope with stress and overcome health problems.

Key words: Nurses' health, shift work, Psychological Stress

working day, evening, or rotating shifts (7).

Shift work sleep disorder is defined by the American Academy of Sleep Medicine as sleep disorder consisting mainly of excessive sleepiness, but also insomnia, disrupted sleep schedules and reduced performance, difficulties with personal relationships, irritability and depressed mood (8).

Certain medical conditions may be developed or aggravated by shift work and an association between major medical diseases such as cardiovascular disease, metabolic disorders and shift work has been found (9). Harma's study has reported evidence that inadequate recovery from short or disturbed sleep is a common pathway linking shift work with cardiovascular diseases (10).

Oishi et al's prospective cohort study revealed that shift work is a significant and independent risk factor for the progression of hypertension (11). A study in 2003 has shown significant association between shift work and lipid disturbances (i.e. low HDL-cholesterol and high triglyceride levels) (12).

Shift work has also been found as an independent risk factor for the onset of diabetes mellitus although the evidence is not conclusive. Nagaya et al found that all markers of insulin resistance were more common in shift workers than in day workers in the age group <50 years. Serum concentrations of glucose increased during night work and falls to normal upon return to day work, which indicates that night work is catabolic, which in turn could have long-term health effects and that explains why Prevalence of diabetes was found to increase with increased exposure to shift work (13,14,15).

People working in shifts have also been found to be more prone to start smoking in comparison with normal schedule workers (16).

In addition, nurses working shifts experienced more severe musculoskeletal symptoms like back pain when compared with other nurses (17,18). Migraine has been found to be common among health care workers (19).

Also, studies have shown that shift work stress may enhance the onset of the autoimmune Grave's hyperthyroidism (20).

Considering the wide range of health consequences shift work has on health work staff we considered it essential to look at the effect of shift work on nurses working at King Khalid University Hospital (KKUH), Riyadh.

Methods

We conducted our study among nurses who worked for 8 - 12 hour shifts for the last 6 months at 15 different in-patient wards in King Khalid University Hospital (KKUH), a tertiary care hospital with 800 beds, 14 operating theaters and a surgical intensive care unit made up of 15 beds and an estimated number of 900 nurses.

A pre-tested (through a pilot study conducted among 40 nurses) questionnaire was randomly distributed among 400 nurses. Nurses above the age of 50 years, nurses who were under any kind of anti-depressant medication or sleep disorder medication, pregnant women and new mothers were excluded.

The questionnaire consisted of questions regarding personal data such as (name, age, gender and number of years working at in-patient care at KKUH) and three main parts containing the following variables:

1. Psychological Stress:

Using General Health Questionnaire, which was an effective scale in studies done before and used as one of measures to assess individual well-being in Standard Shift Work Index (21,22). It assesses the level of distress a person might face by

measuring major distress signs such as: feeling unhappy, lack of enjoying activities and lack of concentration, difficulty in making decisions and overcoming problems, losing confidence and feeling worthless.

2. Sleep Pattern:

Using the Epworth Sleepiness Scale (ESS), which is well-validated simple questionnaire that rates the likelihood of falling asleep during daytime in a variety of situations, and is considered to be an indicator of Shift Work Sleep Disorder. ESS scores are correlated with the degree to which patients complained of sleepiness and are linked between patients' complaints and their objective findings, as studies have shown (23,24).

3. Physical Health:

Physical health was assessed by asking about the presence of a list of medical conditions such as hypertension, diabetes, dyslipidemia, lower back pain, joint pain, migraine and hyperthyroidism.

Also we asked participants if they were smokers and if they initiated smoking after working under shifts.

Approval was granted from the Vice Dean for KKUH hospital Affairs as well as chairman of Dept. of Family and Community Medicine and Nursing Department. Informed consent was taken from each Participant. Participants' name disclosure was optional and confidentiality was assured regarding all information.

Data were entered and analyzed by using the Statistical Package for the Social Sciences (SPSS) version 15. Comparative analysis was preformed and P values and chi-square (X²) was measured.

Results

A total 340/400 of nurses (85%) returned the questionnaires; 59 of them met our exclusion criteria so eventually 281 nurses were enrolled in the study. The majority of them (91%) were females. The mean age

Variables	n=281	%
Age		
20 - 30	62	22
30 – 40	132	47
40 - 50	87	31
Gender		
Female	256	91
Male	25	9
Numbers of years of working		
< one year	37	13
1-5 years	102	36
5-10 years	82	29
> 10 years	60	21

Table 1: Demographic data of study participants

was 35 years (47%). The duration of shift work in KKUH was more than 10 years for 22% of them and from 5-10 years for 30 %, from 1-5 years for 37% and 14% worked less than 1 year.

According to General Health Questionnaire 52% (145) were psychologically distressed and 27% (74) had a high level of psychological depression. The relationship between psychological distress and duration of shiftwork (Figure 1) showed that highest stress frequency was in the first 5 years of shift work and decreased by increasing years of shift work. There was a significant statistical association between psychological distress and duration of shift work (P value=0.019).

The majority 87% (243) of nurses were getting an adequate amount of sleep. However 14% (38) had shift work sleep disorder. Regarding the frequency of chronic diseases among nursing staff, Hypertension was the most reported chronic disease (with 11.5%) then musculoskeletal

disorders 7%, migraines 5%, 1.5% diabetes mellitus, 1.5% dyslipidemia and 0.4% hyperthyroidism. The association between development of chronic disease and shift work was statistically significant (P value = 0.001). 6% (17) were found to be smokers, 7 of them started smoking after starting shift work.

Discussion

Shift work's disturbance of the body's circadian rhythm exerts a negative effect on nurses' physical and mental health. The current study is believed to be the first to address the psychosocial health of nurses in Saudi Arabia.

We found that 52% of nurses were psychologically distressed and 27% of them feel severely distressed. When we compared our results with the results of a large study done in eight general hospitals in Japan among 4,407 nurses, we found similar results, 69% of their nurses experienced psychological stress (25).

The nature of a nursing job is a contributing factor in developing

psychological stress. Giving personal care for patients who have become emotionally unstable because of their health problems and dealing with pain and death every single day in addition to risky and challenging situations, collectively build up psychological stress.

Regarding the relationship between stress and duration of shift work, our study showed a significant reverse relationship between stress and duration of shift work. The highest stress frequency was found among nurses who had been working under shifts for 5 years or less and it showed lower frequency among nurses who had been working under shifts for more than ten years. This indicates that shift work induces adjustment like disorders which resolve throughout the years by developing coping strategies to overcome shift work life disturbance. This fact must encourage work managers to arrange workshops to accelerate acquisition of coping managements as fast as possible to guarantee best quality of work during the first years of working.

YEARS						
	<1	1-5	5-10	>10	Total	
<i>Relationship between psychological stress and duration of shift work:</i>						<i>P value</i>
Mild distress	30	67	58	52	207	0.019
High level of distress	7	35	24	8	74	
Total	37	102	82	60	281	
<i>Relationship between sleep and duration of shift work:</i>						<i>P value</i>
Adequate amount of sleep	35	89	68	51	243	0.372
Sleep disorder	2	13	14	9	38	
Total	37	102	82	60	281	
<i>Relationship between Health and duration of shift work:</i>						<i>P value</i>
No disease	36	79	59	34	208	<0.001
Have disease	1	23	23	26	73	
Total	37	102	82	60	281	

Table 2: The relationship between psychological stress, sleep pattern, health and duration of shift work

In the current study, about 87% of the nurses have an adequate amount of sleep despite their shift duties and 14% of them have sleep disorders.

In comparison with the study of Gold et al that has been conducted in Massachusetts hospital among 878 of their nurses, we found that their result was close to ours. There 92%

of the shift nurses have comfortable, continuous, and regular sleep hours (7). On the other hand, Burch et al 2005 and other studies concluded that nightshifts were associated with poor sleep (26,27). Our study finding can be explained by the fact that most of our study participants were expatriates living away from their families, so they have less family and social obligations and that would

give them more free time to spend in sleeping.

However, we found that 14% who have shift work have sleep disorder. In a study conducted in Turkey; one of the factors, which had a negative affect, was gender. It was found that females had more sleep disturbances than males, including experiencing more drowsiness

Variable	N=280	%
No disease	208	74
Diabetes mellitus	4	1.4
Hypertension	31	11
Chronic lower back pain	8	3
Joint pain or arthritis	11	4
Dyslipidemia	4	1.4
Migraine	14	5
Hyperthyroidism	1	0.4

Table 3: Health status of nurses working at KKHU

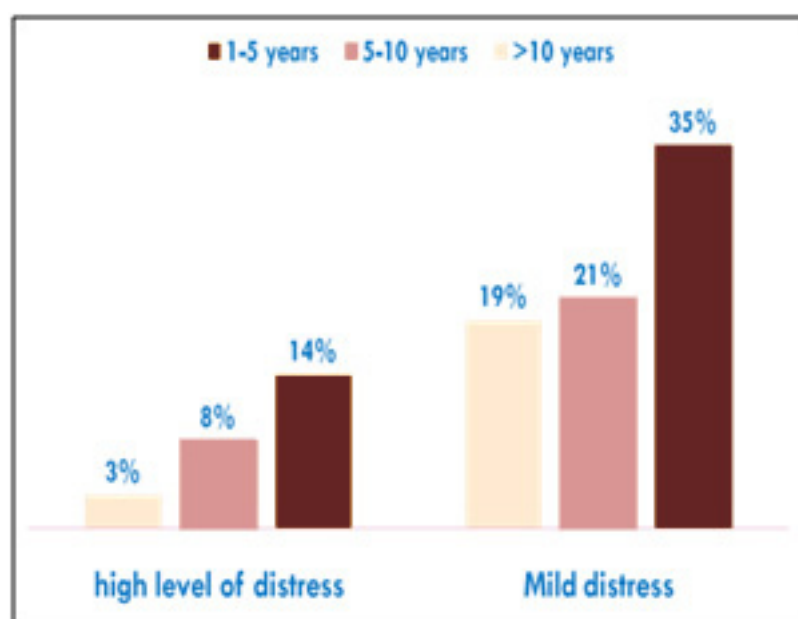


Figure 1: The relationship between psychological distress and duration of shift work

during work; and the majority of our study participants were females (28).

In our study, 27% of nurses reported having a health problem which was close to the findings (22.4%) of Letvak and Buck 2008(29).

In our study hypertension was the most reported chronic disease among the participants and it increased with years of shift work. This was also found in the study of Oishi et al. 2005 which concluded that shift work is a significant and independent risk factor for the development of hypertension (11).

In an experimental study of day workers who were suddenly rescheduled to night shifts, increased levels of serum glucose and cholesterol were reported. These levels fall to normal upon return to day work, suggesting that working for a long time in night shift eventually leads to development of diabetes mellitus and hyperlipidemia. In our study the frequencies of these diseases were small, (both were 1.5%) and this may be because most of our sample population have been working for less than 5 years (51%) as the mentioned mechanisms for development of chronic disease is longer. Our finding regarding

diabetes mellitus is compatible with the study of Karlsson et al, which did not find any association between shift work and hyperglycemia (12,14).

Musculoskeletal disorders including backache and joint problems were collectively 6.7% and it was the second most reported problem in our study although it was lower than the finding (16.7%) reported in the Letvak and Buck study (29). Our findings were also compatible with the study of Boork et al, which emphasizes that nursing staff have one of the highest incidence rates of work-related musculoskeletal disorders of all occupations (30).

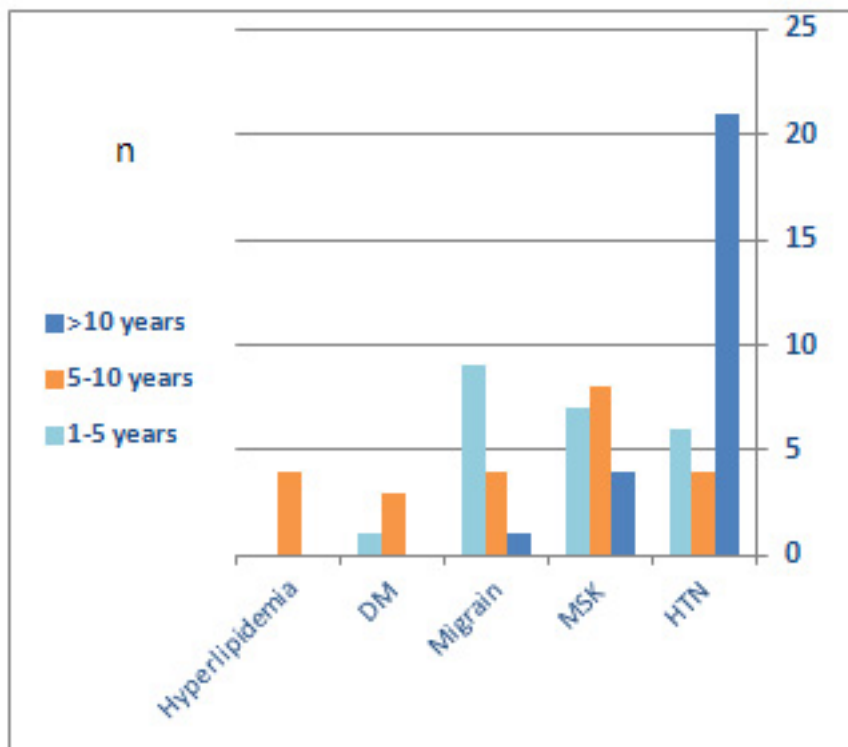


Figure 1: The relationship between psychological distress and duration of shift work

Moving and handling patients is the most probable reason for work related back pain among nurses (31,32,33). Other non-patient handling nurses' tasks considered as risk factors to develop Musculoskeletal disorders, include Pushing beds and stretchers, Lifting and moving equipment, Cleaning beds/unit after discharge etc (34).

The frequency of migraine reported in our study was (5.2%) which was less than the frequency that was obtained by the study of Durham et al (17%). One of the major differences for this finding could be related to the fact that Durham used the International Headache Society (HIS) criteria for assessing migraine frequency. In our study we just asked about presence of diagnosed migraine rather than using special criteria (35).

Our study showed only a small number of smokers (6%) whereas reviews suggest that shift workers are more likely to smoke than the general working population (4). Our finding may be because the majority of our sample population was female (91%) and Indians, in whose culture females are not usually smokers.

Limitations

We did not determine the effect of specialty on the level of psychosocial stress and health of the nurses. Although this is done in one of the biggest multicultural nursing setting in Riyadh, still the results cannot be generalized to all the hospital settings of KSA.

Recommendations

Coping strategies such as workshops counseling group meetings have to be scheduled in order to decrease physiological and psychological problems related with shift work.

Nursing staff's free time could be arranged so as to facilitate recovery from shift work, especially after night shift.

As shift work can be considered to be an additional load, shift workers' health requires regular checking-up. Therefore, establishment of counselors and screening programs only dealing with nurses, should be established. If there are signs of health impairment, the working hours should be organized to take account of nurses' tolerance to shift work.

To our knowledge, this is the first study in Saudi Arabia, which aimed to assess the effect of shift work among nurses so further large scale studies are encouraged.

Acknowledgement

We would like to express our appreciation to nursing staff at the KKHU who cooperated with us to conduct this study and to our wonderful colleagues (Azhar Al-Shaqaq, Fatimah Al-Kawai, Mona Al-Shaikh, Fatimah Al-Shaikh and Wessam Al-Thawab) who helped us in the data collection phase.

References

1. McVicar A. Workplace Stress in Nursing: a Literature Review. *Journal of Advanced Nursing* 2003; 44 (6): 633-642.
2. Scott AJ. Shift Work and Health. *Prim Care* 2000; 27(4): 1057-79.
3. Costa G and Sartori S. Ageing, Working Hours and Work Ability. *Ergonomics* 2007; 50: 1914-1930.
4. Sack R, Auckley D, Auger R, Carskadon M A, Wright K, Vitiello MV and Zhdanova IV. Circadian Rhythm Sleep Disorders: Part I, Basic Principles, Shift Work and Jet Lag Disorders. *Sleep* 2008; 30(11): 1460-1483.

5. Williams C. Work-life Balance of Shift Workers. Statistics Canada 2008; 75(001-X): 5-16.
6. The National Sleep Foundation, 2009. Available at: <http://www.sleepfoundation.org/> [accessed on: June 2009]
7. Gold D, Rogacz S, Bock N, Tosteson T, Baum T, Speizer F and Czeisler C. Rotating shift work, sleep, and accidents related to sleepiness in hospital nurses. *American Journal of Public Health*, 1992;82(7):1011-1014.
8. American Academy of Sleep Medicine, 2009 . Available at: <http://yoursleep.aasmnet.org/> [accessed on: June 2009]
9. Conway PM, Campanini P, Sartori S, Dotti R and Costa G: Main and Interactive Effects of Shiftwork, Age and Work Stress on Health in an Italian Sample of Healthcare Workers. *Applied Ergonomics* 2008; 39: 630-639.
10. Harma M. Work Hours in Relation to Work Stress, Recovery and Health. *Scand. J. Work Environ. Health* 2006; 32: 502-514.
11. Oishi M, Suwazono Y, Sakata K, Okubo Y, Harada H, Kobayashi E Uetani M and Nogawa K. A Longitudinal Study on the Relationship between shift Work and the Progression of Hypertension in Male Japanese Workers. *Journal of Hypertension* 2005; 23(12): 2173-2178.
12. Karlsson B, Knutsson A, Lindahl B, Alfredsson L. Metabolic disturbances in male workers with rotating three-shift work. Results of the WOLF study. *International Archives of Occupational and Environmental Health* 2003;76(6): 424-430.
13. Knutsson A: Health Disorders of Shift Workers. *Occupational Medicine* 2003; 53: 103-108 .
14. Nagaya T, Yoshida H, Takahashi H and Kawai M. Markers of Insulin Resistance in Day and Shift Workers Aged 30-59 years. *Int Arch Occup Environ Health* 2002 ; 75: 562-568 .
15. Suwazono Y, Sakata K, Okubo Y Harada H, Oishi M, Kobayashi E, Uetani M, Kido T and Nogawa, K. Long-Term Longitudinal Study on the Relationship Between Alternating Shift Work and the Onset of Diabetes Mellitus in Male Japanese Workers. *Journal of Occupational & Environmental Medicine*. 2006; 48(5):455-461.
16. Amelsvoort L. Smoking among Shift Workers : More than a Confounding Factor. *Chronobiology International* 2006; 23 (6):1105 - 1113.
17. Sveinsdóttir H. Self-assessed Quality of Sleep, Occupational Health, Working Environment, Illness Experience and Job Satisfaction of Female Nurses Working Different Combination of Shifts. *Scand J Caring Sci*. 2006; 20(2):229-37.
18. Vieira ER, Kumar S, Narayan Y. Smoking, No-exercise, Overweight and Low Back Disorder in Welders and Nurses. *International Journal of Industrial Ergonomics*. 2008; 38: 143-149.
19. Hisayoshi I. Clinical Survey Researches on Practical Medical Procedures of Treating Migraine. Survey on Chronic Headache among the Nurses and Pharmacists. *Henzutsu no Gutaiteki na Iryo Tejun ni kansuru Chosa Kenkyu Heisei* 2004; 15: 66-74.
20. Magrini A, Pietroiusti A, Coppeta L, Babbucci A, Barnaba E, Papadia C, Iannaccone U, Boscolo P, Bergamaschi E and Bergamaschi A. Shift Work and Autoimmune Thyroid Disorders. *Int J Immunopathol Pharmacol*. 2006 ; 19(4 Suppl): 31-6.
21. Goldberg D. The Detection of Psychiatric Illness by Questionnaire. Oxford University Press 1972;21
22. Tuckera P & Knowles S. Review of studies that have used the Standard Shiftwork Index: Evidence for the underlying model of shiftwork and health. *Applied Ergonomics* 2008; 39:550-564.
23. Johns MW. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale. *Sleep* 1991; 14: 540-545.
24. Dev B. The Epworth Sleepiness Scale; *Occupational Medicine* 2007; 57(3): 232.
25. Kenshu S, Takashi O, Yoshitaka K, Eise Y, Takeo M, Satoru H, Yuko Y, Eiji I, Akiyo K, Takako T and Makoto U. Mental Health Status, Shift Work and Occupational Accident among Hospital Nurses In Japan. *Journal of occupational health* 2004; 46: 448-454.
26. Burch J, Yost M, Johnson W, Allen E. Melatonin, sleep, and shift work adaptation. *J. Occup. Environ. Med* 2005; 47 (9): 893-901.
27. Nag A & Nag P. Do the work stress factors of women telephone operators change with the shift schedules? *Int. J. Ind. Ergon* 2004; 33 (5):449-461.
28. Karagozoglu S and Bingöl N: Sleep Quality and Job Satisfaction of Turkish Nurses. *Nurs Outlook* 2008; 56(6):298-307.
29. Letvak S & Buck R. Nursing Economics 2008; 26(3):159-165.
30. Brooks S, Bernard T, Burns C, Cattani J, DeBaldo A, Nelson A. Manual Handling Workload and Musculoskeletal Discomfort in Nursing Personnel. University of South Florida. Department of Environmental and Occupational Health. 2001.
31. Knibbe, J and Friele, R. Prevalence of back pain and characteristics of the physical workload of community nurses. *Ergonomics* 1996; 39(2), 186-198.
32. Love C. Lifting injury. A study of the occupational health perspective. *Nursing Standard* 1997; 11 (26): 33-38.
33. Smedley J, Egger P, Cooper C, & Coggon D. Prospective cohort study of predictors of incident low back pain in nurses. *British Medical Journal* 1997; 314 (7089): 1225-1228.
34. Owen BD, Keene K, and Olson S. Patient handling tasks perceived to be most stressful by hospital nursing personnel. *Journal of Healthcare Safety, Compliance & Infection Control* 2000/2001; 5 (1): 1-7.
35. Durham C, Alden K, Dalton J, Carlson J, Miller D, Englehardt S, Neelon V. Quality of Life and Productivity in Nurses Reporting Migraine. *Headache* 1998; 38 (6): 427-435.

THE EFFICACY OF TWO ACTIVE METHODS OF TEACHING ON STUDENTS' COMPETENCY:

Abstract

Introduction: Students must be able to analyze, interpret, and incorporate new information with existing knowledge and apply these competencies to solve novel problems in scientific issues.

This study compared two methods of scenarios with a real clinical setting and peer group feedback in students' knowledge and their performance.

Materials and Methods: The study is an experimental study on 45 nursing students in the field of psychiatry. Two groups were trained by scenario based learning and peer feedback in two stages.

Results: There were significant differences between mean score of students' evaluation in the two methods ($p < 0.05$). Mean score of students' knowledge and performance from peer assessment was statistically significant in both pre and post test ($p < 0.05$).

Conclusion: Considering the results, we strongly suggest using an active method of teaching which is useful for clinical teaching in the clinical ward.

Keywords: Peer feedback; scenario bases learning; clinical skills; knowledge; performance

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Introduction

Students must be able to analyze, interpret, and incorporate new information with existing knowledge and apply these competencies to solve novel problems (1). The last decade has witnessed rapid expansion in medical knowledge. Trends in medical education have shifted away from didactic teaching towards contextual or problem-based learning (PBL) which is justified by studies showing superiority of PBL in improving reasoning and communication skills(2).

In many colleges, integrating the affective domain and cognitive domain of learning provides some insights into the use of active learning, experiential learning theory (ELT), and the emerging use of appreciative inquiry (AI) to enhance the learning experience(3).

"Scenario-based learning is involved the student in a situation or context and exposes them to issues, challenges, dilemmas and skills" (4).

This method uses "triggers" from the problem case or case-based training to define their own learning objectives (5).

The knowledge explosion has been accompanied by a decrease in didactic teaching. This

educational paradigm has been led by widespread embracement of active learning, which was to improve students' ability to solve the problem and identify the knowledge, competencies and skills (2).

Scenario-based teaching is feasible and useful teaching for exposing students to the complexity of real-life problems. This approach beyond traditional boundaries may offer considerable advantages in training for clinical procedures (6).

Michael and Shreeve and also Kneebone et al, claim that Scenario-based learning improves the following skills in students:

- "Teamwork"
- Listening
- Recording
- Respect for colleagues' views

Scenario-based teaching to improve students' performance in a clinical environment is a feasible and useful method to promote their learning perceived by participants. This approach blurs traditional boundaries between skills laboratory teaching and clinical practice sand may offer considerable advantages in training for clinical procedures(7).

This method requires the ability to process and discuss ideas and learn independently, hence students who have significant deficiencies in communication are more likely to be unsuccessful in a PBL program (8).

Wood claimed that the scenario branches in multiple directions based on the learner's responses. The learner gets feedback and he or she learns to influence the outcome by adjusting his or her behavior.

Peer assessment is an excellent instrument to promote collaboration and feedback between students. It allows students to view, create, and discuss projects, papers, Web pages and other assignments. Individuals or groups can create documents. Instructors may specify how much participants can comment on specific sentences, paragraphs, or the entire document (5).

Shin also reported that this method is a cooperative learning technique that promotes critical thinking, problem solving, and decision-making skills (9).

"Peer assessment using marks, grades and tests have shown positive formative effects on student achievement and attitudes. These effects are as good as or better than the effects of teacher assessment" (10).

The use of peer feedback in the learning environment offers a number of distinct advantages including: "increasing the timeliness of feedback, providing potential learning opportunities for learner, reflection, humanizing the environment and building community, have the potential to increase the quality of discourse, which over time can lead to increased learning" (11).

Self and peer-assessment as potential learning opportunities are often considered together. They have several advantages. Peer assessment can help self-evaluation and feedback. By judging the work of peers, students gain insight into their

own competencies. "Peer and self-assessment help students to develop the ability of making judgments and a necessary skill for study and professional life" (12,13).

Some of the research identifies two distinct types of peer assessment; "the peer assessment of product and the peer assessment of performance" (also referred to as the peer assessment of process). Peer assessment of product is where students assess other students' work: either a finished product, in case of summative assessment, or a work in progress in the case of formative assessment. Hence peer assessment can be used formatively within a course" (14).

This allows their peers' products to illustrate potential positions which learners themselves could have taken up in producing the product. In other words, peer assessment often involves self-reference, allowing learners to determine standards for their own performances (15).

The present study aims to investigate the efficacy of two methods of peer assessment and scenario-based learning on the promotion of nursing students, knowledge and performance in the psychiatric field.

Materials and Methods

This study is a comparative study on 45 nursing students. All students were randomly divided into two groups and were trained by two methods of scenario based learning and peer group assessment or peer feedback. One group used the scenario from real scenarios or constructing scenarios by teacher. All the cases were discussed by students, then they were evaluated by teacher and the last feedback was provided to students.

In scenario-based learning sessions, to determine content students are asked to:

- share experiences about the subject event
- describe desirable outcomes about content presented.

- share best practices or known instances of consistent achievement of the desired outcomes
- create strategies expected to lead to successful outcomes.

Students in the second group were trained by peer group assessment. Peer Review is an excellent instrument to promote collaboration and feedback between students.

The teacher allows students to view, create and discuss their selected subject.

In this way, the patient was presented by one of the students and students discussed the issues raised by peers and peers provided feedback to each other. All cases and methods of evaluation were similar in both groups. The students' knowledge was evaluated by short question essay in both pre and post test stages and students' performance was evaluated by standardized performance checklist which is written by teachers in pre and post test. Student's scores calculated from 100.

Descriptive statistics as (mean and SD) and analytic statistics (such as a Paired T-test and student T-test) were used for analyzing the result in SPSS software.

Results

Our results showed that 62% of students were female and 38% of them were male. The average age was 22. Other results showed that both methods of teaching increased students' competencies in two aspects of students' knowledge and performance. Other findings from student's t-test revealed that there was a significant difference between the student's mean scores on knowledge and performance in both methods ($p < 0.05$) (Table 1).

This result showed that the mean score of students in peer group assessment was higher than that of the other group.

Variable	Peer group review (n=23)		Scenario base learning (n=22)		T	P
	Pretest	posttest	pretest	posttest		
Student's knowledge from diagnosis, disease and management	69.70±4.36	88.86±5.52	71.32±3.55	75.88±4.47	2.88	0.008
Students' Performance from diagnosis, disease , and management	22.01±2.31	55±6.32	16±2.31	18±2.31	-2.88	0.01
Students' knowledge from communication, and patient education	58.15±3.74	70.36±4.51	54.88±3.55	55.31±3.2	-4.51	0.001
Performance from communication, and Patient education	42.60±2.40	55.87±4.90	37.45±2.78	37.75±2.85	3.23	0.002

Table 1: The comparison student knowledge and performance from two methods of scenario based learning and peer group assessment

Variable	pre-test	post- test	T	p
Students' Knowledge from diagnosis, disease	69.70±4.36	88.86±5.52	-3.93*	0.001
Students' Performance from diagnosis, disease , and management	22.51±2.32	55±6.32	2.88 ^{***}	0.01
Students' knowledge from communication, and patient education	58.15± 3/74	70.35± 4.50	3.27 ^{***}	0.002
Students 'performance from communication, and patient education	42.60±2.40	55.87±4.90	2.66 ^{****}	0.002

Table 2: Differences mean score of students in peer feedback pretest- post test

The difference between the mean score of students' competency in knowledge and performance in the pre-test and post-test peer group assessment from paired t-test was statistically significant ($p < 0.05$) (Table 2 - previous page).

Discussion

There was a significant difference between the student's mean scores on knowledge and performance in the two methods ($p < 0.05$). The mean score of students from peer group assessment in students' knowledge and performance was higher than scenario-based learning. These results were approved by other studies.

A systematic review of problem-based learning (PBL) in undergraduate, pre-clinical medical education during 22 years of research consisting of 30 unique studies, recently showed that PBL does not impact on knowledge acquisition. Evidence for other outcomes does not provide unequivocal support for enhanced learning (16).

Evidence for other results did not provide unequivocal support for enhanced learning (1).

Vernon stated that the disadvantages of PBL have been reported to be related to its increased cost and faculty time, lower levels of content-specific knowledge, decreased learning efficiency, etc.

Results showed that peer feedback is a sufficient method to develop students' knowledge and performance in a clinical ward. Many sets of evidence have approved this result and emphasized on the positive aspect of this method on the students.

By involving students in the assessment, it allows teachers to gain an insight in the dynamics of the group and measure things that are not possible without student's assistance. It has indeed been argued that tutor assessment of this

type of work is not sufficiently valid and that students are better placed to assess their own or each other's work (17).

Keith approved our result and reported that peer assessment is of adequate reliability and validity in a wide variety of applications. Peer assessment of writing and peer assessment of using marks, grades, and tests have shown positive formative effects on student's achievement and attitude.

Another research reported that this method increased class participation and had a positive effect on student's experience and perceived understanding of course material, as well as the social atmosphere during class discussions (18).

Some researchers recommended the combination method of clinical training to improve student learning such as Bryan, Krgch and et al; to understand the impact of peer interaction and collaborative learning on student's self-efficacy beliefs and persistence in a distance education context (14).

The result showed significant difference between the mean score of students' competencies in the pre and post-tests and peer group assessment was statistically significant ($p < 0.05$).

Peer feedback significantly enhanced mastery of the original material. Furthermore, the student's ability to solve novel problems was significantly enhanced following peer instruction, which enhanced the mastery of the original material and enhanced meaningful learning and the student's ability to solve novel problems (19).

Field, et al agree with another research report that, trainers evaluated all aspects of peer assessment highly, including their post-training confidence in examination skills, self efficacy and this indicates that the Peer assessment was effective (20).

Dannefer and Henson suggest that it is possible to introduce peer assessment for formative purposes in an undergraduate medical school program that provides multiple opportunities to interact with and observe peers (21).

Bruno and Martine described part of an investigation into the reliability and potential benefits of incorporating peer assessment into English language programs in his article. In contrast to other findings, it suggests that students had a less positive attitude towards assessing their peers' language proficiency, but they did not score their peers' language proficiency very differently from the other assessment criteria. The overall validity of peer assessment has mostly been evaluated by surveying participants and various studies find the assessment to be fair (22).

Obstacle suggested by Orsmond, Merry and Reiling is that peer assessment might be time-consuming for students and that they would object to this imposition (23). The time taken for the process is clearly dependent on the design of the system and is therefore largely in the hands of the course designer.

Lin et al also believe that, in comparison to traditional assessment methods peer assessment can be too demanding of students, too time consuming and criteria setting can be problematic (24).

Some of these researchers confirm our result and emphasize on the positive impact of this method on students.

Conclusion

Considering the results obtained and the effectiveness of peer review in the student's clinical skills, it is the strongest method of teaching as regards critical and cooperative learning skills. We strongly recommend that conducting this approach be practiced in clinical teaching.

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References

- 1- Hartling L, Spooner C , Tjosvold L, Oswald A. Problem-based learning in pre-clinical medical education: 22 years of outcome research. *Medical teacher* 2010; 32(1):28-35.
- 2- Epstein R. Learning from the problems of problem-based learning. *BMC Medical Education* 2004; 4(1):1.
- 3- Shreeve MW. Beyond the didactic classroom: educational models to encourage active student involvement in learning. *The Journal of Chiropractic Education* 2008; 22(1):23.
- 4- Glasgow J. Active learning strategies: Scenario-based learning. Retrieved 2005 August 22. Available from [http://scope.citl.ohiou.edu/FLC/Activelearning/Scenario based.html](http://scope.citl.ohiou.edu/FLC/Activelearning/Scenario%20based.html)
- 5- Wood DF. Problem based learning. *BMJ* 2003; 326:328-30.
- 6- Kneebone R, Kidd J, Nestel D, Barnet A, Lo B, King R, et al. Blurring the boundaries: scenario based simulation in a clinical setting. *Medical Education* 2005; 39(6):580-7.
- 7- Topping K. Peer assessment between students in colleges and universities. *Review of Educational Research* 1998, 68(3):249-76.
- 8- Carrera LI , Tellez TE , D'ottavio AE. Implementing a problem-based learning curriculum in an Argentinean medical school: implications for developing countries. *Academic Medicine* 2003; 78(8):798.
- 9- Shin R , Daly B , Vera E. The relationships of peer norms, ethnic identity, and peer support to school engagement in urban youth. available from: <http://asca2.timberlakepublishing.com/files/10-4-379%20shin.pdf>.2007
- 10- Vanden BI, Admiral W, Pilot A. Peer assessment in university teaching: An exploration of useful designs. Paper presented at the European Conference on Educational Research, University of Hamburg 2003; 17-20.
- 11- Corgan R, Hammer V, Margolis M , Crossly C. Making your online course successful. *Business Education Forum* 2004, 58 (3), 51-53.
- 12- MacLeod L. Computer-aided peer review of writing. *Business Communication Quarterly* 1999; 62(3):87-94.
- 13- Dochy F , Segers M , Sluijsmans D. The use of self-, peer and co-assessment in higher education: a review. *Studies in Higher Education* 1999; 24(3):331-50.
- 14- Bryan R, Krych A, Carmichael S , Viggiano T, Pawlina W. Assessing professionalism in early medical education: experience with peer evaluation and self-evaluation in the gross anatomy course. *Ann Acad Med Singapore* 2005; 34(8):486-91.
- 15- Langan M, Wheeler P. Can students assess students effectively? Some insights into peer-assessment. *Learning and Teaching in action* 2003, 2(1). available from <http://www.celt.mmu.ac.uk/ltia/issue4/langanwheeler.shtml>
- 16- Setia S, Bobby Z, Ananthanarayanan P, Radhika M, Kavitha M, Prashanth T. Case-based Learning Versus Problem-based Learning: A Direct Comparison from First Year Medical Students Perspective. *Web med Central Medical Education* 2011; 2(6):1-16.
- 17- Rollinson P. Using peer feedback in the ESL writing class. *ELT journal* 2005;59(1):23-30.
- 18- Poellhuber B, Chomienne M, Karsenti T. The effect of peer collaboration and collaborative learning on self-efficacy and persistence in a learner-paced continuous intake model. *Journal of Distance Education* 2008; 22(3):41-62.
- 19- Cortright RN, Collins HL , Di Carlo SE. Peer instruction enhanced meaningful learning: ability to solve novel problems. *Advances in physiology education* 2005; 29(2):107-11.
- 20- Field M, Burke JM , McAllister D, Lloyd DM. Peer assisted learning: a novel approach to clinical skills learning for medical students. *Medical Education* 2007; 41(4):411-8.
- 21- Dannefer EF, Henson LC, Bierer SB, Grady Weliky TA, Meldrum S, Nofziger AC, et al. Peer assessment of professional competence. *Medical Education* 2005; 39(7):713-22.
- 22- Pond K, Coates D, Palmera OA. Student experiences of peer review marking of team projects. *International journal of management education* 2007; 6(2): 30-43.
- 23- Orsmond P, Merry S, Reiling K. The importance of marking criteria in the use of peer assessment. *Assessment & Evaluation in Higher Education* 1996; 21(3):239-50.
- 24- Lin SSJ, Liu EZF, Yuan S. Student Attitudes toward Networked Peer Assessment: Case Studies of Undergraduate Students and Senior High School Students. *International Journal of Instructional Media* 2002, 29(2):241-54.

THE RELATIONSHIP BETWEEN FEELING OF ANXIETY AND DEPRESSION AMONG NURSING STUDENTS AT THE FACULTY OF NURSING, MANSOURA UNIVERSITY: A LONGITUDINAL STUDY

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Introduction

Anxiety may be thought of as an emotional process marked by subjectively unpleasant experiences. (1) Anxiety is an unpleasant and sometimes debilitating emotion that is experienced in anticipation of some form of disaster. (2) On the other hand, anxiety is defined as "apprehension without apparent cause". (3) In this respect, Kemp et al (2006) have mentioned that anxiety is the body's reaction to a perceived, anticipated or imagined danger or threatening situation. (4)

Anxiety is a major predictor of academic performance and various studies have demonstrated that it has a detrimental effect. Students with high anxiety develop and maintain less complete conceptual representations of the course content. Students with high levels of anxiety are more likely to employ less-effective study strategies, and more likely to procrastinate and engage in repetitive memorization strategies. (5)

Depression is the most common psychiatric problem in adults and depression evaluation in students is a major index of their mental well-being. Multiple research has revealed that psychiatric problems such as depression are the most common causes of failure of a student to gain academic achievement. Therefore, evaluation of depression and its characteristics in university students is an important health research topic. (6)

Depression in students is primarily caused by adaptive difficulties and stresses. Disorientation regarding the university environment in the first year students, together with separation from their families, lack of interest in their courses, difficulty with teachers and other students, and economic and dormitory problems may all lead to psychiatric problems and failure in academic achievement. (6)

Abstract

The relationship between students' anxiety and depression among nursing students was examined. The study sample consisting of 110 students was drawn from the Faculty of Nursing, Mansoura University, Egypt. A quantitative research study was conducted using a correlational longitudinal design. Depression-Anxiety Scale was used. Findings from this study showed a significant difference between anxiety and depression among nursing students in the first, fourth and internship periods. The difference was found to be statistically significant ($P=0.00$, $P=0.000$ and $P=0.019$ respectively). Also there were statistically significant positive correlations among depression and anxiety through the first year, fourth year and internship. The strongest of these correlations was in the internship year. Based on the finding of this study we may conclude that; depression and anxiety are still a major psychological problem in

nursing students especially in the first year and internship which necessitates considerable attention to the problems of particularly newly admitted and internship students.

Keywords: Anxiety, depression, nursing students and longitudinal study.

Healthy nursing students are likely to become healthy nurses who can then model and promote healthy lifestyles with their patients. Depression decreases the function of students and disturbs the relationship between nurse and patient. To decrease depression, the rate and causes of depression should be identified. (7)

Significance of the study:

Although nursing students are confronted with significant academic, psychological and existential stressors throughout their training, there is a diminutive body of Egyptian literature that examines the mental health status of nursing students. This proposed a need to assess psychological conditions in the form of anxiety and depression among the nursing students.

Aim of the study:

The aim of this study was to investigate the relationship between feeling of anxiety and depression among nursing students through their studying years.

Research questions:

Is there a relationship between anxiety and depression among nursing students?

Does the anxiety and depression increase through the years of nursing education or not?

Subjects and Method

Design and Sample

A longitudinal correlational design was utilized in this study, a stratified random sample of 110 full time nursing students at the Faculty of Nursing were included in this study.

Setting:

The study sample was drawn from the faculty of nursing, Mansoura University, Egypt.

Subjects:

110 nursing students. They were recruited from first year (100) graduated from secondary school and 10 from second year their previous qualification were technical institute of nursing.

Tools for data collection:

○ **Socio-demographic data sheet** for students was designed by the researcher. It included age, social status, educational year, previous qualifications before admission to the faculty, mode of admission, students' perception for nursing image before and after admission, students' perception for staff attitude toward nursing image.

○ **Depression-Anxiety Scale:**

The Depression-Anxiety scale was developed by EL-Rakhawy and Shaheen (1972). (8) A 60-item scale included 30 items to measure depression and 30 items to measure anxiety. One point is given for each question answered by "yes" and zero for each answer with "no". The total scores measuring from 15-30 were considered to be above normal. From zero to 14 indicates normal, 15- 24 suggests susceptible and from 25 to 30 indicates anxiety or depression.

Student's consent:

After providing explanation for the purpose and nature of the study, informed consent was obtained from the dean of the faculty and the students who accepted to participate in the study. The researcher assured the students that participation in the study was voluntary and the anonymity and confidentiality of their response was assured.

Pilot study:

The pilot study was conducted on 10 students out of the sample selected conveniently to check and ensure clarity, applicability and feasibility of the tools and necessary modification was done accordingly. This pilot study was performed 2 weeks before

collection of data. Following the pilot study, the final form of the tool was reconstructed and made ready for use.

Data collection:

After the approval of the ethical research committee was obtained, data collection was initiated from January 2007, 2010, and 2011. During the first year, fourth year and internship. The total sample consisted of 110 students; 100 students from first year and only 10 students from second year who graduated from the Technical Institute of nursing or health according to the rules of admission (Supreme Council of Universities) which allows 5-10% of the students who graduate from the technical institute of nursing or health to enroll straight into second year nursing faculty.

The data was collected in three phases; the first phase during the first year and second year and was just collected from 10 student whose previous qualification was technical institute of health or nursing ; the second phase during the fourth year, and the third phase during the internship.

Results

The first part of the study is devoted to parameters of Socio-demographic characteristics of the studied sample (Table 1 - next page).

Table 1 shows that the study sample consisted of 110 students; their mean age was 17.4 years (SD \pm 0.7). Regarding students' previous qualifications, it was found that: 90.9 % of the samples were first year from secondary school, and only 9.1 % were second year from the technical institutes. More than half of the samples (57.3%) were involuntary admissions to the faculty. Less than half of the sample (46.4 %) had a positive attitude about nursing image which changed to more than half (56.4%) after admission.

Variable	No 110	%
Age:		
17	76	69.1
18	23	20.9
19	9	8.2
20	2	1.8
$X \pm SD = 17.4273 \pm 0.72262$		
Year:		
1 st year	100	90.0
2 nd year	10	9.1
Previous qualification:		
secondary school	100	90.9
technical institute	10	9.1
Mode of Admission:		
voluntary	47	42.7
involuntary admission	63	57.3
Students perception of nursing image:		
Before admission	59	53.6
Negative attitude	51	46.4
Positive attitude		
After admission	48	43.6
Negative attitude	62	56.4
Positive attitude		
Total	110	100

Table 1: Frequency distribution of the students according to age, year, previous qualification, mode of admission and their perception of nursing image (n=110)

Table 2 (opposite page) shows the presence of anxiety and depression among nursing students. More than half of the students were susceptible to anxiety in the first year (52.7%), which decreased to less than half (45.5%) in the fourth year and increased in the internship to become 73.6%. While 2.7% were anxious in the first year, this decreased in the fourth year to 0.9% and increased to 17.3% in the internship.

Regarding the presence of depression among the students, more than half of the students were susceptible to depression (56.4%) in the first year which decreased to more than one third (37.3%) in the fourth year and increased to more than two thirds (78.2%) in the internship. While 0.9% had depression in the fourth year it reached to 5.5% in the internship.

The third part of the study describes the relationships between students' anxiety and depression and their mode of admission, previous qualification and perception of nursing image (Table 3 - opposite page).

In relation to students' anxiety and their mode of admission, previous qualification, and perception of nursing image in Table 3, it was found that; less than two thirds of students who were susceptible to anxiety were found among those of involuntary admission to the faculty either in first, or fourth years or internship. The difference was statistically significant ($P = 0.032$, 0.003^{**} and 0.003^{**} respectively). The majority of anxious or susceptible to anxiety students were from secondary school either in first, or fourth years or internship. No significant difference was found among first year and internship ($P = 0.226$ & 0.183) while a statistically

significant difference was found among the fourth year ($P = 0.009^{*}$).

More than half of the students who were susceptible to anxiety were among those who have a negative attitude about nursing image. There is no significant difference among first, and fourth years and internship ($P = 0.494$, 0.558 & 0.914 respectively).

Table 6 (page 30) displays the correlation between students' anxiety and their mode of admission, previous qualification and perception of nursing image. It shows statistically significant negative correlations among mode of admission and previous qualification, while there was a positive correlation with student's perception of nursing image.

Academic Year					
Anxiety	First Year				
	1 st year		4 th year		Internship
	No	%	No	%	No %
No anxiety	49	44.5	59	53.6	10 9.1
Susceptible	58	52.7	50	45.5	81 73.6
Anxious	3	2.7	1	0.9	19 17.3
X ± SD	0.5818±.54826		0.4727±.51951		1.0818±.50921
Total	110	100	110	100	110 100
Fourth Year					
Depression	1 st year		4 th year		Internship
	No	%	No	%	No %
No depression	48	43.6	68	61.8	18 16.4
Susceptible	62	56.4	41	37.3	86 78.2
Depressed	0	0	1	.9	6 5.5
X ± SD	.5636±.49820		.3909±.50856		.8909±.45626
Total	110	100	110	100	110 100

Table 2: Frequency distribution of anxiety and depression among nursing students

Anxiety	Mode of admission				Total		Pearson Chi square (P)
	Involuntary N0	%	voluntary N0	%	N0	%	
First year							
No anxiety							
Susceptible	22	44.9	27	55.1	49	100	P=.032*
Anxious	38	65.5	20	34.5	58	100	FET= .025*
	3	100	0	.0	3	100	
Fourth year							
No anxiety	25	42.4	34	57.6	59	100	P= .003**
Susceptible	37	74.0	13	26.0	50	100	FET= .001**
Anxious	1	100	0	.0	1	100	
Internship							
No anxiety	3	30.0	7	70.0	10	100	P= .003**
Susceptible	43	53.1	38	46.9	81	100	FET= .001**
Anxious	17	89.5	2	10.5	19	100	
Total	63	57.3	47	42.7	110	100	

Table 3: Relation between students' anxiety and their mode of admission

Anxiety	Previous qualification				Total		Pearson's Chi square (P) Pearson's (R)
	secondary school		technical institute		N0	%	
	N0	%	N0	%			
First year							
No anxiety	42	85.7	7	14.3	49	100	P=.226 FET= .324
Susceptible	55	94.8	3	5.20	58	100	
Anxious	03	100	.0	0	3	100	
	100	90.9	10	9.1	110	100	
Fourth year							
No anxiety	49	83.1	34	57.6	59	100	P= .009** FET= .003**
Susceptible	50	100	0	0.0	50	100	
Anxious	1	100	0	.0	1	100	
	100	90.9	10	9.1	110	100	
Internship							
No anxiety	8	80.0	2	20.0	10	100	P= .183 FET= .169
Susceptible	73	90.1	8	9.9%	81	100	
Anxious	19	100	0	.0	19	100	
Total	100	90.9%	10	9.1	110	100	

Table 4: Relation between students' anxiety and their previous qualification

Anxiety	Perception of nursing image				Total		Pearson Chi square(P)
	Negative attitude		Positive attitude				
	N0	%	N0	%	N0	%	
First year							P=.494 FET=. 533
No anxiety	29	59.2	20	40.8	49	100	
Susceptible	29	50.0	29	50.0	58	100	
Anxious	1	33.3	2	66.7	3	100	
Fourth year							P= .558 FET= .768
No anxiety	32	54.2	27	45.8	59	100	
Susceptible	27	54.0	23	46.00	50	100	
Anxious	0	0	1	100	1	100	
Internship							P= .914 FET= .950
No anxiety	6	60.0	4	40.0	10	100	
Susceptible	43	53.1	38	46.9	81	100	
Anxious	10	52.6	9	47.4	19	100	
Total	59	53.6	51	46.4	110	100	

Table 5: Relation between students' anxiety and their perception of nursing image

Variables	Anxiety		
	First year	Fourth year	Internship
Mode of admission	r= -.247** (P=.009)	r= -.289** (p=.002)	r= -.321 (p=.001)
Previous qualification	r= -.163* (p=.088)	r= -.289** (p=.002)	r= -.176* (p=.066)
Perception of nursing image	r= .111 (p=.248)	r= .031 (p=.745)	r= 0.030* (p=.758)

Table 6: Correlation between students' anxiety and their mode of admission, previous qualification and perception of nursing image

	Mode of admission				Total		Pearson Chi square (P)
	Involuntary NO	%	voluntary NO	%	NO	%	
Depression							
No depression	20	41.7	28	58.3	48	100	P=.004** FET= .006
Susceptible	43	69.4	19	30.6	62	100	
Depression	0	0	0	.0	0	0	
Depression 2							
No depression	32	47.1	36	52.9	68	100	P= .019* FET= .009
Susceptible	30	73.2	11	26.8	41	100	
depression	1	100	0	.0	1	100	
Depression 3							
No depression	2	11.1	16	88.9	18	100	P= .000** FET= .000**
Susceptible	56	65.1	30	34.9	86	100	
Depression	5	83.3	1	16.7	6	100	
Total	63	57.3	47	42.7	110	100	

Table 7: Relation between students' depression and their mode of admission

Depression	previous qualification				Total		Pearson Chi square (P)
	secondary school		technical institute		NO	%	
	NO	%	NO	%			
First year							
No depression	40	83.3	8	16.7	48	100	P=.015* FET= .020*
Susceptible	60	96.8	2	3.2	62	100	
depression	0	0	0	.0	0	0	
Fourth year							
No depression	58	85.3	10	14.7	68	100	P= .033* FET= .018*
Susceptible	41	100	0	0	41	100	
Depression	1	100	0	.0	1	100	
Internship							
No depression	13	72.2	5	27.8	18	100	P= .009* FET= .022*
Susceptible	81	94.2	5	5.8	86	100	
Depression	6	100	0	0	6	100	
Total	100	90.9%	10	9.1	110	100	

Table 8: Relation between students' depression and their previous qualification

Tables 7-9 illustrate the relation between students' depression and their mode of admission, previous qualification, and Perception of nursing image. The majority of depressed students or those susceptible to depression were among those who had involuntary admission to the faculty either in first, or fourth years or internship. The difference was statistically significant (P= 0.004, 0. .019 *

and 0. 000** respectively). Also all depressed students or those susceptible to depression were from secondary school. The difference was statistically significant either in the first year, fourth year or internship (P=.015, P=0.033 and P=0 .009 respectively). Moreover more than half of the students susceptible to depression were among those who have negative attitude about nursing image. There is no

significant difference among first, fourth year and internship (P=0.101, P=0.382 and 0.157 respectively).

Table 10 displays the correlation between students' depression and their mode of admission, previous qualification and perception of nursing image. It shows statistically significant negative correlations among mode of admission and previous qualification, while there is

Depression	Perception for nursing image				Total		Pearson Chi square (P)
	Negative attitude		Positive attitude		NO	%	
	NO	%	NO	%			
First year							
No depression							
Susceptible	30	62.5	18	37.5	48	100	P=.101 FET= .124
Depression	29	46.8	33	53.2	62	100	
	0	0	0	.0	0	0	
Fourth year							
No depression	39	57.4	29	42.6	68	100	P= .382 FET= .373
Susceptible	20	48.8	21	51.2	41	100	
Depression	0	0	1	100	1	100	
Internship							
No depression	13	72.2	5	27.8	18	100	P= .157 FET= .160
Susceptible	44	51.2	42	48.8	86	100	
Depression	2	33.3	4	66.7	6	100	
Total	59	53.6	51	46.4	110	100	

Table 9: Relation between students' depression and their perception of nursing image

Variables	Depression		
	First year	Fourth year	Internship
Mode of admission	r= -.278** (P=.003)	r= -.268** (P=.005)	r= -.399** (P=.000)
Previous qualification	r= -.232* (P=.015)	r= -.244* (P=.010)	r= -.272 (P=.004)
Perception for nursing image	r= .156 (P=.103)	r= .110 (P=.251)	r= .183* (P=.055)

Table 10 Correlation between students' depression and their mode of admission, previous qualification and perception for nursing image

a positive correlation with student's perception of nursing image.

The fourth part: Relation between anxiety and depression among nursing students (Tables 11 and 12).

Table 11 illustrates the relation between anxiety and depression among students in the study sample. It notes that there was a significant difference between anxiety and depression among nursing student in the first, and fourth years and internship. The difference was found to be statistically significant (P=0.00, P=0.000 and P=0.019 respectively).

Table 12 displays the correlation between depression and anxiety among students in the study. It shows statistically significant positive correlations among depression and anxiety through the first year,

the fourth year and internship (P=0.000), (P=0.000) and (P=0.001) respectively. The strongest of these correlations was between depression and anxiety among the internship year.

Discussion

The current study was conducted to investigate the relationship between feelings of anxiety and depression among nursing students at the Faculty of Nursing, Mansoura University.

Many factors can lead to the development of anxiety; students' past experiences and beliefs, which have been shaped by a complex interplay of factors, may result in unique reactions to a test situation and lead to anxiety. These may include their past experiences with courses and their perceptions of

course load, as well as their ability to manage time (Sujit and Kavita, 2006) (5).

There are some general situations which often cause anxiety such as: leaving home and / or adapting to a new life, moving to a new area, giving presentations, or performing in new situations, coping with work and exams, dealing with relationships or the lack of relationships, Preparing to leave university. But sometimes it is specific situations that are anxiety provoking, such as: apprehension about entering new situations, having to deal with people in authority, worrying about whether you have chosen the right course or job, panic about facing exams or making a presentation, worrying about social acceptance and approval, or about failure, criticism or rejection from others, fears about health (University

Anxiety	Depression First year				Total		Pearson Chi square
	No	%	Susceptible	Depression			
First year							
No anxiety	34	69.4	15	30.6	0	49 100	P= .000**
Susceptible	14	24.1	44	75.9	0	58 100	
Anxious	0		3	100	0	3 100	
Total	48	43.6	62	56.4	0	110 100	
Fourth year							
	Depression (Fourth year)				Total		
	No	%	Susceptible	Depression			
No anxiety	52	88.1	7	11.9	0 .0	59 100	P= .000**
Susceptible	16	32.0	34	68	0 .0	50 100	
Anxious	0	0.0	0	0.0	1 100	1 100	
Total	68	61.8	41	37.3	1 0.9	110 100	
Internship							
	Depression (internship)				Total		
	No	%	Susceptible	Depression			
No anxiety	4	40.0	6	60.0	0 .0	10 100	P= .019*
Susceptible	14	17.3	64	79.0	3 3.7	81 100	
Anxious	0	.0	16	84.2	3 15.8	19 100	
Total	18	16.4	86	78.2	6 5.5	110 100	

(*) denotes significant (**) denotes highly significant

Table 11: Relation between anxiety and Depression among students in the study sample

Anxiety	Pearson correlation coefficient Depression		
	First year	Fourth year	Internship
First year	r=0.468** (P=.000)		
Fourth year		r=0.614** (P=.000)	
Internship			r=0.315** (P=.001)

**correlate is significant at the 0.01 level

Table 12: Correlation between depression and anxiety among students in the study sample

of Cambridge Counseling Service, 2005) (9).

Depression is the most common psychiatric problem in adults, and depression evaluation in students is a major index of their mental well-being. Multiple researchers revealed that psychiatric problems such as depression are the most common causes of failure of students to gain academic achievement. Therefore, evaluation of depression and its characteristics in university students is an important health research topic (Rafati and Ahmadi, 2004) (6).

The present study revealed that, more than half of the students were susceptible to anxiety and depression in the first year (52.7%) and (56.4%) respectively (Table 3) and this may be related to many factors: first, effect of adolescent stage, change in student's life either related to University atmosphere or residential problems; some students may move from their home to the campus, stress of new academic environment, financial burden, friendship problems, lack of support system and academic burden.

Depression and anxiety decreased in the fourth year to (37.3%) and (45.5%) respectively. This can be explained by the fact that students may be developing more coping strategies with the previous conditions. Moreover the percentage increased to reach around two thirds of the students susceptible to anxiety and depression in the internship. This may be related to stress of a new clinical environment, lack of support, maltreatment either from junior physicians, or nurses, burden of afternoon and night shift, stress of critical patients, in addition to social and personal stressors like marriage,

pregnancy, labour, and new roles like wife and motherhood. All of these may be considered as predisposing factors to psychological troubles.

In line with the foregoing, Inam et al. 2003 (10) claimed that 60% of students had anxiety and depression. Also she stated that prevalence of anxiety and depression was high among newly entered students (1st and 2nd year) as compared to students who have cleared the first professional examination (3rd and 4th year). That could be due to stress of the new study environment.

In agreement with the findings of the present study, (Rafati and Ahmadi, 2004) (6) demonstrated that 60% of students were depressed, 34% of them had mild depression, 18.4% moderate, 6% relatively severe and 1.6% severe depression.

Several studies have reported significant distress among medical students (11-13) (Clark & Zeellow 1988, Lloyd & Crartrell 1984, and Vitaliomo 1988), on the other hand some studies have found little or no evidence of stress among medical students. (14-16) (Helmerts, 1997, Heins et al. 1984, and Verbuegge, 1985).

In addition to those findings, as shown in Table 4, the majority of students suffer from anxiety and depression or susceptible to anxiety and depression were among those who were involuntarily admitted to the faculty, from secondary school, and those who have a negative attitude about nursing image. This may reflect the relation between psychological condition and their frustration due to involuntary admission, the effect of nursing image either in the community or within the students themselves. (Students who graduated from the technical institute consider faculty of nursing as a promotion while those who graduated from secondary school consider the faculty of nursing as an alternative for faculty of medicine but still some dissatisfaction persisted.

This study showed that anxiety is positively correlated with depression either in first year, fourth year or internship ($P=0.000$), ($P=0.000$) and ($P=0.001$) respectively.

Table 13, shows the strongest of these correlations was between depression and anxiety among the internship year students. This could be explained by the fact that there is a strong relationship between anxiety and depression. In addition there is the impact of stressors associated with the internship like; clinical stressors, the gap between the ideal academic studying and actual clinical situation, lack of clear job description, lack of supervision and enough orientation.

The findings of this study may be in line with that of Hanafi (2008) (17) revealing that, anxiety and depression are positively correlated with problem solving ($P=0.000$).

In similar studies, Farmer (1998) and Korobkin, Herron, and Ramirez (1998) found a high correlation between anxiety and depression and suggested a co-occurrence of anxiety and depression symptomatology (18-19). In this respect, Burns and Eidelson (1998) stated in their study that both depression and anxiety may lead to each other, or they may emerge from a common cause (20).

Consistent with our results, Eremsoy, Celimli, and Gençöz (2005) (21) found a significant correlation between depression and anxiety ($p < .001$).

Conclusion

It can be concluded from the present study that depression and anxiety are still a major psychological problem in nursing students especially in first year and internship which necessitates considerable attention to the problems of, particularly, newly admitted students and internship to enhance their effective role in the future of society. These conclusions lead to acceptance of the study hypothesis that there is a relationship between student's anxiety and depression.

Recommendations:

Based on the study conclusions, there is an urgent need for an intervention program to improve the psychological condition of newly admitted students.

As well, counseling services for nursing students should start from the beginning of the admission especially for involuntary admission. We need to give attention to the role of supervision, training and coaching in the internship especially from the faculty of nursing.

References

- 1- American Psychiatric Association (APA). (2000). Diagnostic and statistical manual of mental disorders. 4th edition. Washington, DC: Author. Available at <http://www.pubmed.com>.
- 2- Robinson, K. (2004). Common Symptoms of Anxiety. Available at: <http://www.anxiety-and-depression-solutions.com/>
- 3- David, B. (2004). What is anxiety? Available at: <http://www.pubmed.com/>.
- 4- Kemp, G., Larson, H., Jaffe, J., & Segal, J. (2006). Anxiety Attacks and Disorders: Symptoms, Causes, and Treatment. Available at: <http://www.pubmed.com/>.
- 5- Sujit, S. & Kavita, S. (2006). Effect of Students' Perceptions of Course Load on Test Anxiety. American Journal of Pharmaceutical Education; 70 (2) Article 26. Available at: <http://www.pubmed.com>.
- 6- Rafati F. and Ahmadi J. (2004). Depression in Nursing Students of Shiraz University of Medical Sciences. Journal of Research in Medical Sciences.1: 39-41. Available at: <http://www.pubmed.com>.
- 7- Ahmadi, J., Toobaee, Sh., and Alishahi, M. (2003). Depression in nursing students. Available at: <http://www.pubmed.com>.
- 8- El-Rakhawy, Y. and Shaheen, O. (1972). Initial applications for the depression-anxiety scale. Psychiatric department in the faculty of medicine, Cairo University.

- 9- University of Cambridge Counseling Service. (2005). Anxiety & panic. Available at: <http://www.pubmed.com/>
- 10- Inam, A, Saqib, E. & Alam, E. Prevalence of Anxiety and Depression among Medical Students of Private University. JPMA (Journal of Pakistan Medical Association) Vol 53, No.2, Feb. 2003.
- 11- Clark DC, Zeellow PB. Vicissitudes of depressed mood during four years of medical school. JAMA 1988; 260: 2521-8.
- 12- Lloyd C, Cantrell NKA. Psychiatric symptoms in medical students. Compr Psychiatry 1984;25:552-65.
- 13- Vitaliomo PP. A biopsychosocial model of medical student distress. J Behav Med 1988; 11:311-13.
- 14- Helmers KF. Stress and depressed mood in medical students, law students and graduate students at McGill University. Acad Med 1997;72:708-14.
- 15- Heins M, Fahey S, Leiden L. Perceived stress in medical, law and graduate students. J Med Edu 1984; 59:169-79.
- 16- Verbuegge LM. Gender and health: an update on hypothesis and evidence. J Health Soc Behav 1985; 26:156-182.
- 17- Hanafi S., (2008). The relation between nursing student's self esteem; and their depression, anxiety, & problem solving abilities at the faculty of nursing, Mansoura University. Maser dissertation, faculty of nursing Cairo University.
- 18- Farmer, R.F. (1998). Depression symptoms as a function of trait anxiety and impulsivity. Journal of Clinical Psychology, 54(2), 129-135.
- 19- Korobkin, S., Herron, W., & Ramirez, S. (1998). Severity of symptoms of depression and anxiety as predictors of duration of psychotherapy. Psychological Reports, 82, 427-433.
- 20- Burns, D.D., & Eidelson, R.J. (1998). Why are depression and anxiety correlated? A test of the tripartite model. Journal of Consulting and Clinical Psychology, 66 (3), 461-473.
- 21- Eremsoy, C. E., Çelimli, S. & Gençöz, T. (2005). Students under Academic Stress in a Turkish University: Variables Associated with Symptoms of Depression and Anxiety, Vol. 24, No. 2, p. 123-133.

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