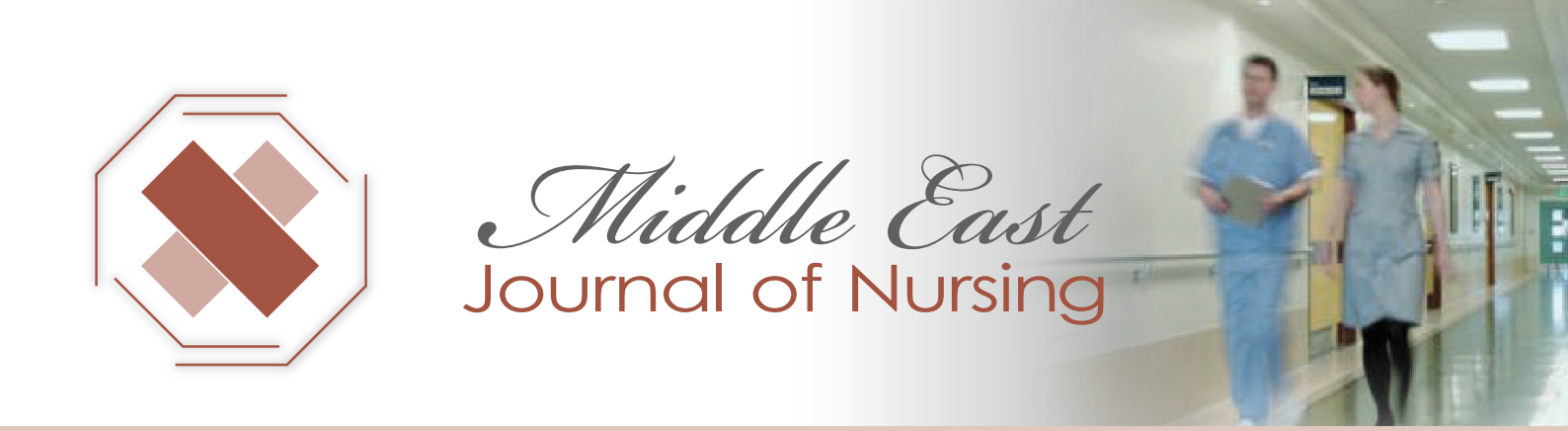

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FROM THE EDITOR

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This is the last issue this year of the journal. The journal is gradually gaining recognition in the region. We are grateful for our authors, readers, reviewers, and the editorial board. In addition we can not forget the production team headed by Lesley Pocock.

A paper from Bangladesh looked at residential field site training (RFST) is an approach to community based education (CBE) in undergraduate medical curriculum in Bangladesh. It was a questionnaire survey carried out among 4th year undergraduate medical students and teachers. Most of the students (78-98%) and teachers (88-96%) felt that RFST provides students an opportunity to aware of common rural health problems, develop a caring attitudes and assists to develop their generic skills. The authors concluded that as an approach to CBE, RFST provides a real life exposure and helps to develop generic skills in future doctors.

A cross sectional descriptive study from Nigeria attempted to assess the awareness and knowledge about diabetes mellitus (DM) amongst nursing students in the Niger Delta region of Nigeria. A total of 144 students were enrolled for the study. 85% of the respondents know that DM is a chronic disease and caused by insulin deficiency. The authors concluded that knowledge and awareness of certain aspects of diabetes amongst nursing students is poor. More health education is needed to address these deficiencies in order to equip them with the knowledge to positively help their community to reduce the burden of the DM on the society.

A case control study from Iran looked at the relationship of thrombophilia with intrauterine fetal growth restriction. 43 women with IUGR affected embryos as a group and 20 women with healthy fetuses as controls were studied and evaluated . Data showed that the relationship between IUGR Thrombophilia and significant, but to reach more definitive results further studies seem necessary.

Mohammadi S & Dadkhah A looked at coping mechanisms of Iranian adolescent population. A negative relationship between Solving Problem and Reference to Others coping styles and severity of behavioral disorder were observed. The results indicated that solving Problem and Non-productive Coping styles (and consequently coping strategies of these two coping styles) can significantly predict severity of behavioral problem.

Azar Aghamohammadi A & Nooritajer M did a descriptive comparative study of pregnancy outcomes in primiparous and multiparous women with age raise. The authors concluded that mother`s high age can be independent factor for pregnancy outcomes. The primiparous women are exposed to more affectivity of age .As a matter of fact the aged women can have a natural vaginal delivery with a term infant and the over age mustn`t be a contraindication for pregnancy.

THE COMPARATIVE STUDY OF PREGNANCY OUTCOMES IN PRIMIPAROUS AND MULTIPAROUS WOMEN WITH AGE RISE

ABSTRACT

Background and aim: Nowadays many women delay their pregnancy even up to their 40th decades of their life because of different reasons such as occupational, educational and economical reasons. Therefore, protecting the mother and infant`s health needs complete awareness of pregnancy outcomes in these ages for the midwives and the gynecologists. The present research was done with the aim of comparing the pregnancy outcomes in primiparous women and multifarious women over 35 and below 35.

Study Design: This research was a descriptive comparative study. The inputs were obtained of 1021 pregnant women and pregnancy outcomes were compared in 4 groups of primiparous and multifarious women over and below 35.To analyze the inputs using SPSS software ,the ?2 test, Fisher, Odds-Ratio and logistic regression with forward method were used.

Results: In primiparous women, there is a statistically significant relation between the age over 35 and preeclampsia, gestational diabetes, preterm labor, malpresentation, cesarean and low birth weight. In multiparous women, there is a significant relation between age of over 35, preeclampsia and low birth weight. In the women over 35, parity is effective on the measure of preeclampsia and cesarean delivery, only.

Conclusion: Mother's high age can be an independent factor for pregnancy outcomes. The primiparous women are exposed to more affectivity of age. As a matter of fact the aged women can have a natural vaginal delivery with a term infant and advanced age mustn't be a contraindication for pregnancy.

Key Words: Primiparous, multiparous, pregnancy outcome.

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Introduction

Mother`s high age is always considered as a risk factor for pregnancy outcome.[1] The reaction of a woman to pregnancy is influenced by various factors through which the women's age at time of pregnancy can be known as the most important factor that has an undeniable effect on the pregnancy process and labor. x^2 Nowadays, Women delay their pregnancy up to 4th or even 5th decades of their life because of different reasons such as delay in marriage, educational and professional reasons.[3] Many of them experience pregnancy unwillingly because of negligence of using contraceptive methods.4 At the moment, almost 10 percent of pregnancies occur at the age of over 35.5 According to the report of the Iran statistic center, the average age of first marriage was increased [4.7] years from 1957 to 2002 and paying attention to this, the average age of first pregnancy was also increased. The primary studies claim that the midwifery events and prenatal death is increased in the women over 35. In aged women who are suffering from chronic diseases or have a weak physical condition, the probability of these risks is more. n one study in a private hospital, the chance of preterm labor, growth limitation and prenatal death wasn't increased in the ages of over 35 but the chance of gestational diabetes, preeclampsia and cesarean delivery was little increased, although in public hospitals the risk rate was more. The reason for this difference is the socio-economic position that has the hygienic case relatively unavailable. *Bottom (et,al)* found in their research results that both age and parity affect the diabetes rate, labor disorders and cesarean rate.[5] *Ildelbaere (et al)* reported breech presentation rises with age.1 Generally speaking, although better pregnancy outcomes are increasing in aged women, there is more danger for the multiparous aged women in comparison.3 The research result of *Yossef Ezra (et al)* has shown that in primiparous women over 35 years, the cesarean rate is 2 times more than multiparous women above 35.[6] *Camille Hoffman (et al)* has shown the relation between the increasing rate of maternal death risk, low birth weight and very low birth weight in aged women. They have discussed the high age as an independent risk factor for prenatal death.[7] William's research indicates that the average of birth weight in the aged primiparous women is lower than in young women In comparison[3] *Camille Hoffman (et al)* considered the mother`s high age an indirect factor for low birth weight.[7] *Karatas (et al)* came to this result in their research that there wouldn`t be any significant difference in birth weight at term in aged and young women.[8]

Dhaindra (et al) concluded that the prenatal death rate is 2 times more in aged women at the time of labour[9] based on a study on two essays in two different populations that study the relation between fetal death with age rise. *Karen (et al)* concluded that fetal death rate is under the effect of economical and social factors and life condition more than age.[10] According to available contradictory statistics, there are a lot of ambiguous issues about this

matter as to if pregnancy outcome is under the effect of mother`s increasing age and how parity can have an effect on this matter.

The present research was done with the aim of comparing the pregnancy outcome in primiparous and multiparous women over 35 and below 35.

Materials and Methods

This study was a comparative descriptive one that was done after getting the license from the moral committee of Iran Nursing and Midwifery University.

Sampling was in continuous method. This means that the available files in the archive were studied. The samples were studied according to the acceptance rate and omission. According to the available information in files, the arranged registration card was filled in which included pregnancy outcomes like cesarean, gestational diabetic, preterm labor, preeclampsia, and placenta previa and low birth weight. Then the resultant information was entered into SPSS software and the measurement of these outcomes compared in the groups of primiparous over 35 with primiparous under 35, multiparous over 35 with multiparous under 35 and the group of primiparous over 35 with multiparous over 35.

The omission measures of the sample were included in these cases: all the woman under 20 years, cesarean records, the record about suffering from uro-genital infections in the present pregnancy, smoking and addicted women, the history of five gravid and more, pregnancy with aid methods, multigravida in present pregnancy, suffering from known physical and mental diseases including all heart, kidney and immune diseases, all kinds of cancers, hepatitis, evident diabetes, sexually transmitted diseases etc.

The number of required samples was estimated in each group with the certainty measure of 45 percent and evaluation power of 80 percent and PO-PI=0/1 and PO= 0/5 of 250 people. 1000 people of the required samples were estimated.

Findings

Once research was concluded 1021 files were studied paying attention to acceptance and omission standards. Among these files, there were 250 primiparous women over 35, 254 primiparous under 35, 257 multiparous over 35 and 255 multiparous under 35. The age group of 20-24 had the greatest supply in the first primiparous group under 35 and their average age was 24.02 year with the standard declination of 3.385. The age group of 35-39 had the greatest supply in the multiparous group over 35 and their average age was 36.35 years with the standard declination of 1.739. The age group of 25-29 had the greatest number in the multiparous group under 35 and their average age is 26.71 with the standard deviation of 3.761. The age group of 35-39 had the greatest number in the multiparous group over 35 and the average age was 36.81 with the standard deviation of 2.3198.

Discussion and Conclusion

The research findings show that 20.8 percent of primiparous women over 35 had preeclampsia while this number is estimated at 5.8 percent in the people under 35. x^2 test showed that there would be a meaningful relation between the age over 35 and suffering from preeclampsia in primiparous women. (R<0.0001) and the measure of OR showed pregnancy in the ages over 35 increases the risk of preeclampsia in primiparous women 4.272 times. *William H (et al)* reported that the preeclampsia rate was 5.4 percents in primiparous women over 35 versus 3.4 percent in primiparous women of 20-29 years. In this study, there is a significant relation between the mother's high age and preeclampsia in multiparous women (P= 0.013) and the amount of OR (OR= 2.389) showed that pregnancy in the ages of over 35 increases the risk of suffering from preeclampsia 2.398 times in multiparous women. *Jacobson (et al)* understood that severe preeclampsia increased with rising age but the measure of mild preeclampsia decreased. The reason for this contradiction was unknown.[13] The basic reason for increasing the preeclampsia measure in elderly women is unknown. Some studies discuss that the probability of aged women's infection has a relationship with a lot of pathogens that stimulate their immune system for rousing and increasing the probability of preeclampsia.[14] There is also a theory that in aged women, preeclampsia distinction happens sooner because of more accurate control of the blood pressure they had before pregnancy which would be distinguished for the first time in pregnancy and it isn't separable with preeclampsia.[3] This research findings show that 6.4 percent of primiparous women over 35, suffer from diabetes, although this number is 2.7 in primiparous under 35. The x^2 test showed there was a statistically meaningful relation between the age over 35 and gestational diabetes in primiparous women.[15] There are a lot of reasons to explain the increase of gestational diabetes with increasing the age that increases the over weight rate with age rise and destruction of inter blood vessels of cells is one reason.[16] In the present research, the gestational diabetes rate in multiparous women over 35 is 5.1 percent versus 4.3 percent in women under 35. x^2 test showed despite the increasing rate of gestational diabetes in multiparous women with increasing the age, this rise is not statistically significant. *Jan Cleary's (et al)* research result indicates that there isn't a statistically significant relation between the age and gestational diabetic in women of (35-40) in proportion to women of (20-29) but this relationship in women over 40 in proportion to women of (20-29) is statistically significant.[11]

The present research is in agreement with *Jan Cleary (et al)* perhaps because of having been the most abundant of the group over 35 in the age group of 35-40 years.

The research result of Delbir (et al) showed that gestational diabetes and blood pressure are the only pregnancy outcomes increasing under the influence of age in spite of exact control in high ages.[1] *Michael (et al)* has reported that gestational diabetic increases in aged women is

one of the reasons for it increasing in the overweight but there isn't any increase in mother and baby's bad outcomes.[1] Studying in this field shows that there is a decrease in the function of B cells of the pancreas and cell sensitivity to insulin with age increase.[17] The function and structure of Hemoglobuline and the means of glycolisation is changed with age rise and it can be one of the reasons of increasing gestational diabetes under the influence of age.[18] Since the prevalence of glucose in aged primiparous is as high as in that of multiparous women. On the other hand in different studies, aged primiparous women showed a higher proportion of glucose intolerance versus young primiparous women. So, it can be concluded that age has more influence in the proportion of the number of pregnancies with glucose intolerance.[4] The findings of this research shows that primiparous women over 35 have had 1.6 percent placenta previa which for the women under 35 is 0.4 percent. Fisher test showed that there isn't any meaningful relation between age over 35 and placenta previa in primiparous women. In their research results, *Jun Cleary (et al)* has found there is a statistically significant relation between placenta previa and age above 35 but this relation must be explained more cautiously because the risk level isn't very high according to the clinical point of view.[11] In the results of *Sahu T Meenakshi's (et al)* researches, there is no meaningful relation between the measure of placenta previa and over age.[19] The findings of this study show that the measure of placenta previa in multiparous women above 35 was 20 percent when this number was zero in multiparous women under 35. To study if there is a statistically significant relation between age above 35 and placenta previa, the Fisher test was used and it was shown that statistically, there would not be any relation between mother's high age and placenta previa in multiparous women. In their research, *Sheine (et al)* has discussed the rise in rate of placenta previa with rise in age.[15] *Michael (et al)* hasn't found any meaningful difference in the point of view of suffering from placenta previa in aged multiparous women in comparison with young women. In their study results, they claimed that despite the existence of risky factors such as mother's over age and mulitparity for suffering from placenta previa, there wasn't any clear reason to explain this contradiction.[20]

The findings of this research show that 17.2 percent of multiparous women over 35 have had pre-term labour since this measure, was 9 percent in multiparous women under 35 years old. x^2 test showed there is a statistically meaningful relation between age above 35 and pre-term labor (p= 0.006). The volume of OR showed the pregnancy in the ages under 35, increases the risk of pre-term labor 2.103 times. The research results of *H Temmerman (et al)* indicates that there is a meaningful relation between mother's age increasing and pre-term labor.[21]

The findings of this research show the rate of malpresentation in primiparous women over 35 years is 8 percent versus 2.8 percent in women less than 35 years.

The x^2 test showed there is a statistically significant relation between mother's age over 35 and malpresentation in primiparous women (p=0.013) and the measure of OR showed that pregnancy in ages over 35 would increase the risk of having malpresentation in primiparous women 2.905 times. In their results, *William (et al)* reported the malpresentation in aged primiparous women was 11 percent versus 6 percent in young primiparous women, which was clinically meaningful.3

Sahu (et al) didn't find any statistically significant difference in malpresentation in comparing aged and young women.[19] The findings of this research showed that 5.1 percent of multiparous women over 35 had malpresentation which was 2.7 percent in women under 35 years. x^2 test showed, despite the rise in malpresentation in aged primiparous women, this rise isn't statistically significant. William's (et al) research has shown that the measure of malpresentation in multiparous women over 40 is 6.9 percent versus 3.7 percent in the group of 20-29 years.[3] The inclined factors of Breech labor are chromosome anomalies; multigravidity and placenta previa in which the rise in breech presentation may be secondary in aged women.[10] The results of different studies indicated that cellular function declines with increase of age. This is the reason for breech increase and bleeding after labour.[17]

The findings of this research show that the measure of cesarean births in primiparous women over 35 has been 64.4 percent versus 47.5 percent in primiparous women under 35. x^2 test has shown there is a statistically meaningful relation between age over 35 in primiparous women and caesarian delivery (p<0.0001). Using the measure of OR has shown that pregnancy would increase the risk of caesarian delivery in primiparous women over 35years twice. *Seoud (et al)* found a statistically significant relation between increasing the rate of cesarean and the age over 35. (R) *Michael (et al)* reported the increasing rate of cesareans in aged women and postulated there would be many reasons for this matter including diseases, obstetric troubles, neonatal problems and decreasing of function with increasing age.[20] *Bell J (et al)* claimed, in their research, maybe aged women have an increased risk of abnormal labor that can be secondary to old age physiology, although mother's age by itself may be one of the factors which can affect on doctor's decisions, patient's request or obstetric troubles.[22] The findings of the present research shows that 32.4 percent of multiparous women over 35 have had cesarean deliveries which is 28.2 in multiparous women under 35. Despite increasing rates of cesarean in aged multiparous women, x^2 test has shown this increase isn't statistically significant. The researches of *Ziadeh (et al)* shows that the measure of cesareans in multiparous women over 35 is 14 percent versus 6 percent in multiparous women

under 35 years.16 Sahu Meenakshi (et al) didn't find any meaningful relation in multiparous women.[12]

The findings of research showed that low birth weight in primiparous women above 35 was 23.2 percent versus 11.6 percent in primiparous under 35. The x^2 test showed that there was a statistically significant relation between low birth weight and age over 35 in primiparous women (p= 0.001) and measure of OR showed pregnancy in the ages over 35 would increase the risk of low birth weight for 2 /306 times. According to their studies and research *Jan Cleary (et al)* reported there would be a statistically significant relation between low birth weight and the age over 40 but the risk rate of suffering was increased. They understood that mothers above 35 years usually would bear a term infant and at the same weight of the control (sample) group.[11]

The findings of this research show that 16.8 percent of multiparous women over 35 would have low birth weight infants; although this number is 9 percent in multiparous women over 35. x^2 test showed there would be a statistically significant relation between mother's over age and low birth weight in multiparous women (p= 0.009). The measure of OR (OR= 2.046) showed that pregnancy in the ages over 35 would increase the risk of low birth weight of 2.046 in multiparous women. *Ziadeh (et al)* showed there was no difference between infant weight in aged multiparous women with young women. This report isn't in agreement with the present research.[16] *Josef (et al)* found a statistically significant relation between the mother's age rise and low birth weight which justified that it can be secondary and because of increasing rates of diabetes, preeclampsia and placenta previa.[21]

Paying attention to the result of the present research, it is postulated that the number of pregnancies is effective only in the rate of preeclampsia (p= 0.001) and caesarian. As a matter of fact primiparous labor increases the rate of preeclampsia 2.227 times and cesarean 3.771 times in aged women.

As a result, mother's high age can be an independent factor for pregnancy outcomes, although most women with over age can have a normal labor with a term infant and without pregnancy outcomes. Over age mustn't be a contraindication for pregnancy.

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Table 1: Comparison of prevalence of pregnancy outcome in primiparous women under and over 35.

P-value	x^2	Odds-ratio	20-34		≤35		group / Pregnancy outcome
			%	number	%	number	
<0.0001	25.069	(7.817, 2.335 CI95%) 4.27	5.8	15	20.8	52	preeclampsia
0.045	4.031	(,6.090 0.995 CI95%) 2.462	2.7	7	6.4	16	Gestational diabetes
0.209	*	(37.795 0.466 CI95%) 4.195	0.4	1	1.6	4	Placenta previa
0.030	4.699	(2.652 1.047 CI95%) 1.677	13.9	36	21.2	53	Preterm labor
2.905	6.135	(1.206 ,6.997 CI95%) 2.905	2.8	7	8	20	malpresentation
< 0.0001	14.74	(1.402, 2.855 CI95%) 2.000	47.5	123	64.4	161	cesarean
0.001	12.005	(3.729, 1.426 CI%95) 2.306	11.6	30	23.2	58	Low birth weight

Table 2: Comparison of prevalence of pregnancy outcome in multiparous women under and over 35.

Odds- Ratio	x^2	P-value	20-34		≥35		group / Pregnancy outcome
			%	number	%	number	
2.398(CI95% 1.878, 4.846)	6.183	0.013	10.5	27	4.7	12	preeclampsia
1.192 (CI95% 0.524, 2.712)	0/167	0.683	5.1	13	4.3	11	Gestational diabetes
4.896 (CI95% 0.434, 54.901)	*	0.061	2	5	0	0	Placenta previa
2.103 (CI%95 1.229, 3.601)	7.481	0.006	17.2	24	9	23	Preterm labor
1.903(CI95% 0.747, 4.851)	1.849	0.174	5.1	13	2.7	7	malpresentation
1.205(CI95% 0.825, 1.752)	1.060	0.303	32.4	83	28.2	72	cesarean
2.046(CI95% 1.195, 3.509)	6.870	0.009	16.8	43	9	23	Low birth weight

Table 3: Comparison of prevalence of pregnancy outcome in primiparous and multiparous women over 35.

x^2	Odds-Ratio (95% CI)	P-Value	multiparous		primiparous		group / Pregnancy outcome
			%	number	%	number	
10.092	2.218 (1.342, 3.665)	0.001	10.5	27	20.8	52	preeclampsia
0.409	1.273 (0.599, 2.704)	0.522	5.1	13	6.4	16	Gestational diabetes
*	0.813 (0.217, 3.076)	1.000	2	5	1.6	4	Placenta prevail
1.314	1.290 (0.827, 2.012)	0.252	17.2	44	21.2	53	Preterm labor
1.729	0.536 (0.211, 1.367)	0.189	5.1	13	8	20	malpresentation
51.802	3.771 (2.609, 5.448)	>0.0001	32.4	83	64.4	161	cesarean
3.246	1.489 (0.959, 2.313)	0.072	16.8	43	23.2	58	Low birth weight

** Fisher test*

IDENTIFICATION OF RISK FACTORS FOR POST SURGICAL WOUND INFECTIONS IN ELECTIVE OPERATIONS: A MULTIVARIATE STATISTICAL ANALYSIS

ABSTRACT

Surgical site infections are the most common complications of inpatient admissions and have serious consequences for outcomes and costs. The significant risk factors or variables, which affect the abdominal surgical site infections and their incidence are: age, sex, nutrition and immunity, prophylactic antibiotics, operation type and duration, type of shaving and secondary infections.

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Introduction

The ancient Egyptians were the first civilization to have trained physicians to treat physical ailments. Medical papyri, such as the *Edwin Smith papyrus (circa 1600 BC) and the Ebers papyrus (circa 1534 BC)*, provided detailed information of management of disease, including wound management with the application of various potions and grease to assist healing *(Breasted, 1930; Bryan, 1930)*.

Hippocrates (Greek physician and surgeon, 460-377 BC), known as the father of medicine, used vinegar to irrigate open wounds and wrapped dressings around wounds to prevent further injury. His teachings remained unchallenged for centuries.

Galen (Roman gladiatorial surgeon, 130-200 AD) was first to recognize that pus from wounds inflicted by the gladiators heralded healing *(pus bonum et laudabile "good and commendable pus")*. Unfortunately, this observation was misinterpreted, and the concept of pus preempting wound healing persevered well into the eighteenth century. The link between pus formation and healing was emphasized so strongly that foreign material was introduced into wounds to promote pus formation-suppuration.

The concept of wound healing remained a mystery, as highlighted by the famous saying by *Ambroise Paré (French military surgeon, 1510-1590), "I dressed the wound. God healed it" (Cohen, 1998)*.

Koch (Professor of Hygiene and Microbiology, Berlin, 1843-1910) first recognized the cause of infective foci as secondary to microbial growth in his nineteenth century postulates.

Semmelweis (Austrian obstetrician, 1818-1865) demonstrated a 5-fold reduction in puerperal sepsis by hand washing between performing postmortem examinations and entering the delivery room.

Joseph Lister (Professor of Surgery, London, 1827-1912) and Louis Pasteur (French bacteriologist, 1822-1895) revolutionized the entire concept of wound infection. Lister recognized that antisepsis could prevent infection *(Lister, 1867)*. In 1867, he placed carbolic acid into open fractures to sterilize the wound and prevent sepsis and hence the need for amputation. In 1871, Lister began to use carbolic spray in the operating room to reduce contamination. As late as the nineteenth century, aseptic surgery was not routine practice. Sterilization of instruments began in the 1880s as did the wearing of gowns, masks, and gloves. Penicillin was first used clinically in 1940 by Howard Florey. With the use of antibiotics, a new era in the management of wound infections commenced.

A survey sponsored by the World Health Organization demonstrated a prevalence of nosocomial infections varying from 3-21%, with wound infections accounting for 5-34% of the total *(Mayon-White, 1988)*.

The 2002 survey report by the National Nosocomial Infection Surveillance Service (NNIS), which covers the period between October 1997 and September 2001, indicates that the incidence of hospital acquired infection related to surgical wounds in the United Kingdom is as high as 10% and costs the National Health Service in the United Kingdom approximately 1 billion pounds (1.8 billion dollars) annually.

Collected data on the incidence of wound infections probably underestimate true incidence because most wound infections occur when the patient is discharged from hospital (about 30-40%), and these infections may be treated in the community without hospital notification.

Post-operative wound infections are the most common serious complications of surgery. It remains a major clinical problem in terms of morbidity, mortality *(Astaneau et al 2001)*, postoperative hospital stay and hospital costs *(Green et al, 1977)*. Based on National Nosocomial Infection Surveillance (NNIS) system reports, SSIs are the third most frequently reported nosocomial infection, accounting for 14%-16% of all nosocomial infection among hospitalized patients *(Mangram et al, 1999)*. Among surgical patients, SSIs were the most common nosocomial infection, accounting for 38% of all such infections. Infection rates in US National Nosocomial Infection Surveillance system hospitals were reported to be: clean 2.1%, clean-contaminated 3.3%, contaminated 6.4% and dirty 7.1% *(Culver DH et al 1991)*.

SSIs are associated with increased morbidity and mortality. Seventy-seven percent of the deaths of surgical patients were related to surgical wound infection *(Mangram et al, 1999)*.

Therefore, the purpose of the present paper is to identify the risk factors affecting the abdominal surgical site infections and their incidence employing the technique of a logistic regression model.

Data Collection and Methodology

The study was carried out in the Department of Surgery, Enam Medical College Hospital, Sava, Dhaka, Bangladesh. Data were collected through pre- and post-operative examinations. The subjects were followed till discharge. Data were collected in standardized data collection form. All data were entered into statistical package for social science (SPSS) software for statistical analysis. Some quantitative variables have been redefined in classifications: age has been dichotomized as older than, or younger than 50 years. Weight and height were used to calculate the body mass index (BMI) (calculated as the weight in kilograms divided by the height in meters squared). According to BMI, patients were classified into three nutritional statuses: obese, normal and underweight. Obesity was defined as a BMI of 30 according to the new World Health Organization's classification. Underweight was defined as a BMI of 18.5 or less.

Types of intervention were dichotomized as abdominal versus extra-abdominal procedure. The univariate analysis was tested using Student's t-test for continuous variables and the Chi-square test for categorical variables.

Multivariate analysis was done using a logistic regression model. To test the independence of the risk factors, the significant variables ($p \leq .05$) in the univariate analyses were entered into a stepwise logistic regression equation using SPSS software to evaluate the risk of each factor when adjusted for other factors.

Patients (n = 307) who had undergone elective surgery were studied and the relationships among variables were analyzed by Student's t and Chi-square tests. To test the independence of the risk factors, the significant variables ($p \leq .05$) were entered into a stepwise logistic regression analysis.

The independent risk factors analyzed were divided into preoperative and intraoperative variables. The preoperative variables were as follows: age, sex, height, weight, the presence of diabetes mellitus, chronic liver disease, chronic renal failure, ASA score, smoking habit, hair removal, preoperative bath and preoperative hospital stay.

The intra-operative variables included the following: name of operation, length of abdominal incision, incision on a preexistent abdominal scar, perioperative blood transfusion, level of surgeon, surgical wound class, type and duration of drain, operation serial number, and the length of operative time. Dependent variables included the following: development of surgical site infection, further treatment required and postoperative hospital stay.

Bio-specimen study was started in the pre-anaesthetic checkup room. Preoperative data was collected from response to a preformed questionnaire. ASA score was collected with the help of the anaesthesiology team. ASA score was dichotomized as ASA class 1 or 2 versus ASA class 3, 4 or 5. Smoking habit was dichotomized as nonsmoker or cessation for $\geq$1 month versus smoker or cessation for $\leq$1 month.

Intra-operative data was collected by in person presence in the operating theatre during the operation. When more than one procedure was performed during the surgical intervention, the main surgical procedure was considered for analysis. Surgeons having post graduate degree in surgery were considered as a consultant.

Duration of operation is time in minutes from skin incision to skin closure. Operative time has been divided into 3 classifications: 60 minutes, from 61 to 120 minutes, and 121 minutes or longer.

Surgical site was examined on the third postoperative day and every three days thereafter till discharge of patient from hospital. The observation schedule was increased to more frequent intervals when surgical site had shown any sign of infection. The CDC NNIS definition was followed to define surgical site infection. Bacteriological culture and sensitivity test of fluid or tissue from incisional site /organ /space was performed as and when required. Infection occurring after discharge was not surveyed.

Results and Discussion

In the study period 309 patients from surgery unit 1 & 2 were included for investigation. Later, two patients were withdrawn as they were discharged from hospital on the second postoperative day. Thus, 307 patients were finally studied. Among them 27 (8.8%) patients developed post-operative wound infection.

Mean age of patients is 41.9 (SD ±16.4) years, with a range of 14 - 90 years. Among them 232 patients (75.5%) are of 50 years or younger. 75 (24.5%) patients' ages are more than 50 years. Wound infection rate is significantly higher in the older age group with a p value of <0.003. In the study 56.7% (174) of the patients were male. Post operative wound infection rate is a bit higher in males (9.8% versus 7.5%), but the difference is not statistically significant.

In the study, fifteen patients (4.9%) were diabetic. Among them 4 (26.7%) patients developed post operative wound infection. This observation is statistically highly significant with a p value of <0.02. In the study, 295 (96.1%) patients had ASA score of 1 or 2 and 12 (3.9%) patients had ASA score of $\geq$3. Among the 12 patients with ASA score of $\geq$3, 5 (41.7%) patients developed post operative wound infection. This observation indicates that the post operative wound infection rate is significantly higher in patients with ASA score of $\geq$3 with a p value of <0.0001. Hair on the skin over the operative site was either not removed (47.2%) or was removed the day before surgery (30.9%) in the majority of patients. Only 67 (21.8%) patients had the preoperative area shaved just before surgery, contrary to the current CDC guidelines. Post operative wound infection rate was 6% in patients who shaved prior to surgery, 9% in patients who did not shave and 10.5% among those who shaved day before operation. The difference in

SSI rate was statistically insignificant with p value of >0.5. In this study, most of the operations (87.3%), were done by consultant surgeon. SSI rate was unusually higher when done by consultants, but the difference is not significant (p>0.7). In 53 (17.3%) patients, incisions were given on a pre-existing scar. SSI rate was lower when incision was given on a pre-existing scar. But the difference is insignificant with a p value of >0.3.

The majority of operations (170) took less than 60 minutes from skin incision to skin closure: 23 (26.1%) operation required more than 2 hours to be completed. The duration of surgical operation also proved to be a significant factor: only 5.3% of operations lasting 60 minutes or less led to infection, while for operations lasting more than 2 hours this rate leapt to 26.1%.

All the risk factors for SSI with p value < 0.05 in univariate analysis were entered into a stepwise logistic regression model for multivariate analysis. ASA score (p<.0001), Diabetes mellitus (p<.004), duration of operation (p<.004), and older age group (p<.006) were proved to be an independent risk factor for wound infection.

Conclusion & Recommendations

This study provided information on rate and risk factors for SSI occurrence in elective operations in the Department of General Surgery of Enam Medical College Hospital, Savar, Dhaka.

To get information on SSI rate, further study on a large scale is needed, including all patients in the study population. Four independent risk factors were identified in both univariate and multivariate analysis. Another five risk factors were identified in univariate analysis but not in multivariate analysis. With the aim of reducing the rate of infectious complications, the risk factors can be divided into the following two categories:

- Unmodifiable factors: age, ASA score, class 3 surgical site and peri operative blood transfusion.
- Factors that are able to be modified before or during surgery: being underweight, preoperative hospital stay, duration of drain for more than three days, diabetes mellitus and operative time.

Could correction of the modifiable factors reduce the postoperative infectious complications? Further study is required to obtain the answer. In conclusion, SSI surveillance should be conducted and maintained in all hospitals to promote better surgical outcomes. The following recommendations are made for consideration:

- We should do our best to reduce the average operation duration to less than 2 hours.
- The average preoperative bed stay should be reduced.
- The time of shaving should approximate the operation time as much as possible.
- Drain should be withdrawn as soon as it is no longer aspirate.
- Good control of glycaemic status should be achieved.
- Enteral feeding should be resumed as soon as possible in pre and postoperative period.
- The efficacy of these proposals should be evaluated by a prospective study.

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Table-1: Age Group versus Wound Infection Cross-tabulation

Age group	Wound infection		Total (%)	The Chi-square test value	P value
	Yes (%)	No (%)			
≤50 years	14(6)	218(94)	232(75.5)	9.021	<.003
>50 years	13(17.3)	62(42.7)	75(24.5)		
Sex					
Male	17(9.8)	157(90.2)	174(56.7)	0.476	>0.4
Female	10(7.5)	123(92.5)	133(43.3)		
Underweight					
Yes	7(19.4)	29(80.6)	36(11.7)	5.76	<0.02
No	20(7.4)	251(92.6)	271(88.3)		
Diabetes mellitus					
Present	4(26.7)	11(73.3)	15(4.9)	6.28	<0.02
Absent	23(7.9)	269(92.1)	292(95.1)		
ASA score					
1 or 2	22(7.5)	273(92.5)	295(96.1)	16.8	<0.001
≥3	5(41.7)	7(58.3)	12(3.9)		
Hair removal pattern					
None	13(9)	132(91)	145(47.2)	1.03	>0.5
Prior to surgery	4(6)	63(94)	67(21.8)		
Day before surgery	10(10.5)	85(89.5)	95(30.9)		
Operation Group					
Abdominal operation	21(9.1)	209(90.9)	230(75)	0.129	>0.5
Extra-abdominal operation	6(7.8)	71(92.2)	77(25)		
Level of Surgeon					
Consultants	24(9)	244(91)	268(87.3)	0.068	>0.7
Residents	3(7.7)	36(92.3)	39(12.7)		
Incision on pre-existing scar					
Yes	3(5.7)	50(94.3)	53(17.3)	0.785	>0.3
No	24(9.4)	230(90.6)	254(82.7)		
Duration of operation					
<60 minutes	9(5.3)	143(94.7)	170(55.4)	11.6	<0.01
60-120 minutes	12(10.5)	102(89.5)	114(37.1)		
>120 minutes	6(26.1)	17(73.9)	23(7.5)		

Table 2: SSI Rate in Relation to Length of Incision

Wound infection	Length of incision (cm)			The t test value	P value
	Mean	Standard Deviation	Standard error		
Yes	13.6	5.4	1.03	1.83	>0.05
No	11.8	4.7	0.28		

Model Summary(e)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.240[a]	.058	.055	.272	.058	18.636	1	304	.000
2	.288[b]	.083	.077	.268	.025	8.369	1	303	.004
3	.328[c]	.108	.099	.265	.024	8.273	1	302	.004
4	.360[d]	.129	.118	.262	.022	7.519	1	301	.006

a Predictors: (Constant), ASA score

b Predictors: (Constant), ASA score, Diabetes mellitus

c Predictors: (Constant), ASA score, Diabetes mellitus, Operation time

d Predictors: (Constant), ASA score, Diabetes mellitus, Operation time, Age group

e Dependent Variable: Wound Infection

AWARENESS AND KNOWLEDGE ABOUT DIABETES MELLITUS AMONGST NURSING STUDENTS IN THE NIGER DELTA REGION OF NIGERIA

ABSTRACT

Objective: To assess the awareness and knowledge about diabetes mellitus (DM) amongst nursing students in the Niger Delta region of Nigeria.

Methods: The study was a cross sectional, descriptive study. A structured questionnaire about the causes, symptoms and complications of DM was administered to the nursing students.

Results: A total of 144 students were enrolled for the study. 85% of the respondents know that DM is a chronic disease and caused by insulin deficiency. Less than a half of the respondents could correctly identify the cut off point of ?7mmol/l fasting plasma glucose as being diagnostic for DM. Two-thirds of the respondents identified obesity as a cause of diabetes while only 42% know that weight reduction could help in the management of DM. Dietary therapy and insulin was identified as the most common method of management of diabetes and passage of excessive urine the most common symptom of diabetes identified by the respondents. Two-thirds of the respondents stated that Type I is the most common form of DM. The kidney was the most common organ identified as being affected by DM, with the nervous system being the least, while 92% agreed that urine sugar can be used to diagnose diabetes. Only 40% of the subjects were of the view that Type 2 DM can be seen in the adolescent.

Conclusion: Knowledge and awareness of certain aspects of diabetes amongst nursing students is poor. More health education is needed to address these deficiencies in order to equip them with the knowledge to positively help their community to reduce the burden of DM on society.

Keywords: Students, awareness, diabetes mellitus, Uyo.

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Introduction

Diabetes Mellitus (DM) has emerged as one of the world's biggest health problems and its prevalence is increasing at an alarming rate. By the year 2010, it is projected that about 220 million people will have diabetes.[1] Diabetes is the leading cause of kidney failure and blindness and also an important cause of non-traumatic lower extremity amputation and cardiovascular disease.[2-5]

In Nigeria, the national prevalence is put at about 2.2% and this continues to be on the increase.[6] Factors responsible for this include increasing obesity due to sedentary lifestyle and reduced physical activity in the population.[7]

It is important to know about the awareness level of a condition in a population, as knowledge is a critical component of behaviour change. Once awareness is created, people are more likely to participate in prevention and control activity. Knowledge about the disease plays a vital role in its further development and its early prevention and detection.[8,9] This study therefore set out to find the awareness and knowledge about DM amongst students in a Nursing School in the Niger Delta region in Nigeria.

Materials and Procedures

This study was a cross sectional, descriptive study. It was carried out at the School of Nursing Anua, Uyo in the Oil rich Niger Delta region in Nigeria. The school is co-educational with the majority of the students being females as the nursing profession is mainly female oriented. Students spend four years in the school with the junior class, being the first two years and senior class the last two years. The students who took part in the study were from the junior class. Ethical approval for this study was obtained from the Ethics Committee of the University of Uyo Teaching Hospital, Uyo. A structured questionnaire about the cause, symptoms, treatment and complications of diabetes mellitus was administered to the students after informed consent was obtained from them. The instrument was pilot tested on fifteen student nurses before distribution, to participants in the study. The purpose of the pilot test was to identify any problem with the wording and for feedback for potential difficulties when answering the question. No potential problem was identified in the course of the pilot study. All consenting students formed the study sample. The questionnaire was administered to the students after their lecture in class and collected immediately to stop them consulting each other. Data obtained from the students included age, sex, family history of DM, amongst other items. After the questionnaire was filled out by the students, it was collected and then analyzed.

Statistical Analysis

Descriptive statistics such as means and standard deviation was used to summarize quantitative variables while qualitative variables were summarized using percentages. Data Analysis was done using statistical package for social science (SPSS) version 13.

Results

A total of one hundred and forty-four students (111 females and 33 males) took part in the study. The mean age of the study subjects was 20±4 years. There was a family history of DM in 28 (19.4%) of the subjects, while 76 (52.7%) said they knew someone who had the disease.

Definition and Diagnosis

One hundred and twenty two (85.9%) of the respondents identified insulin deficiency as the cause of DM with 18 (12.6%) saying it was due to glucagon deficiency and 2 (1.4%) attributing it to growth hormone deficiency. Fifty-seven of the respondents (46.3%) agreed that the cut off value for diagnosis of diabetes is a fasting plasma glucose value? 7mmol/l. Ninety-six (66.1%) of the respondents stated that obesity can lead to DM, while 133 (92.3%) know that urine sugar can be used to diagnose diabetes mellitus. Fifty-seven respondents (39.5%) know that type 2 DM can be seen in the adolescent age group, while 60.5% stated that it cannot be seen in adolescents. Type I DM was identified by eighty-three respondents, (63.3%) as most common type of DM while 31 thought that Type 2 DM is the most common. On the other hand 17 respondents thought that Gestational DM is the most common type of DM.

Clinical Features/ Management

In terms of symptomatology, 131 subjects (90.9%) identified excessive passage of urine as a symptom of diabetes; 50 of them identified weight loss as a symptom, 31 excessive thirst, while 16 identified recurrent infection as a symptom of DM. Fifty-two respondents could identify more than one symptom of DM.

Sixty respondents (41.9%) agreed that weight reduction could help in the management of DM. One hundred and twenty one respondents (84 %) know that DM is a chronic disease. Seventy-six respondents (52 %) agreed that diet is important in the management of diabetes, 39 (27%) stated that drugs could be used to treat the disease, while 86 (59%) accepted that insulin is a treatment. Forty respondents (27%) could identify more than one method of management of DM.

Complications

That the kidney is the most common organ that could be affected by DM was indentified by 93 (64 %) respondents, while 63 (43.7 %) identified the eye, and 17 said it could affect the nerves. Eighteen respondents (12.5%) agreed that DM could affect more than one organ.

The results by the respondents are shown in Table 1.

Discussion

Diabetes Mellitus (DM) is the most common endocrine disorder. The prevalence worldwide ranges between 2 and 6% and has been increasing in Africa in the last 20 years.[10] Despite this increasing rate and the various complications associated with the condition, knowledge of the disease by the public, patients, and health care providers is still very poor.[11] One major challenge for health care providers is how to increase public', patients' and health carers' awareness about the disease. This will help in early diagnosis, appropriate treatment and adequate follow-up strategies. Research has shown that education about diabetes to a population, resulted in a significant increase in knowledge as seen in a Singaporean study.[12]

Diabetes mellitus is caused by relative or absolute lack of insulin, which is produced by the islet cells of Langerhans. The majority of the respondents (85.9%) were able to identify lack of insulin as being the cause of the disorder. This finding is similar. This high level of awareness contrasts sharply with a study done in Tripoli, Libya among staff nurses as 95% of them were able to identify DM as secondary to insulin deficiency.[13] A fasting plasma glucose of ≥7mmol/l is the recommended cut off point for the diagnosis of diabetes.14 However, less than half of the respondents identified this cut off point. This is rather poor considering that only a blood sugar test and usually a fasting plasma glucose is used to diagnose diabetes. In the Tripoli study 96% of the respondents identified the cut off point for diagnosis of diabetes.[13] Continuous nursing education is advocated to bridge these deficiencies in knowledge.

Weight reduction is an important aspect of management especially in Type 2 DM. Weight reduction reduces obesity and hence insulin resistance in these patients, who constitute about 80- 90% of the cases of diabetes worldwide.[14] Less than half of the students agreed that weight reduction is important in diabetes mellitus, however, in the Tripoli study, 87% of the nurses agreed that weight reduction is important in the management of diabetes.[13]

Diabetes is a chronic medical disorder and treatment must be lifelong if patients are to avoid the complications of the disease. The majority of the students agreed that the disease is lifelong. This is encouraging considering that these students who will in the future become trained nurses will be in a vantage position to influence their patients positively in this aspect in terms of adequate health education as ward nurses are the patients' most frequent contacts.[15]

Management of diabetes involves dietherapy, medications including oral hypoglycaemic agents and insulin, amongst others. Many of the respondents identified dietherapy and use of insulin as modes of treatment of diabetes, however knowledge about oral hypoglycaemic drugs was poor. This knowledge about oral medications is poor considering that most persons with diabetes mellitus are taking oral hypoglycaemic drugs. A similar study in the United Kingdom documented this poor knowledge of management of type 2 DM.[16]

In terms of symptomatology, many of the respondents agreed that passage of excessive urine is a symptom of diabetes. Hyperglycemia by causing osmotic diuresis leads to excessive passage of urine with glycosuria in urine. This is not surprising because most people in our society associate passage of excessive urine with diabetes.

Few of the respondents identified weight loss, polydypsia and recurrent infections as symptoms of diabetes, with recurrent infection being the least identified symptom. In the study done in Tripoli 27% of the nurses did not recognize weight loss as a feature of diabetes.[15] Possible explanation could be the association of diabetes and obesity in the adult population.

The increasing incidence and prevalence of diabetes is attributed to the epidemic of Type 2 DM, which is the commonest form of diabetes and is responsible for 80 - 90% of the cases of DM.[14] However, less than a quarter of the nursing students agreed it was the most common type of diabetes with 63.3% of the respondents saying Type 1 DM was the most common type. Improved nursing education to correct this wrong perception is advocated.

Diabetes can lead to microvascular and macrovascular complications. Macrovascular disease is responsible for most of the deaths in persons with diabetes. Microvascular complications can affect the kidney, eye and nerves. Diabetes is the leading cause of end stage renal disease and blindness[2,3] It is also an important cause of lower extremity non-traumatic amputation4. The majority of the subjects identified the kidney and eyes as the organs most affected by diabetes, similar to the Tripoli study.[13]

Nearly two thirds of the subjects (67.6%) agreed that obesity can cause diabetes. This is encouraging as the increasing incidence of Type 2 DM is clearly related to the increasing incidence of obesity as a result of sedentary lifestyle, reduced physical activity and unhealthy diets. Studies have shown that overweight and obesity significantly increase the risk of developing Type 2 Diabetes.[17,18]

The majority (92.3%) of the respondents agreed that urine sugar can be used to diagnose diabetes. This is likely due to the fact that in our society, many people associate diabetes with sugar in urine and hence erroneously believe that diabetes can be diagnosed using urine sugar. This calls for continuous nursing education to correct this erroneous impression amongst the students.

Only 39.5% of the subjects agreed that Type 2 DM can be seen in adolescents. The majority of adolescents have Type 1 DM, but these days, we are seeing an epidemic of Type 2 DM amongst adolescents.[19] This is as a result of unhealthy lifestyle of our youths with many youths living a sedentary lifestyle, not exercising adequately and have an intake of excessive calories which leads to obesity, a risk factor for Type 2 DM. Similar deficiencies in diabetes knowledge has also been documented amongst student nurses elsewhere by *Fisher and Joshi et al.*[20,21]

Without the right knowledge about diabetes, student nurses who will be future nurses cannot positively affect their patients, families and the larger society and with the increasing incidence and prevalence of diabetes, continuous nursing education on diabetes is advocated to correct this poor knowledge.

Conclusion

Knowledge and awareness of certain aspects of diabetes amongst nursing students in the Niger - Delta region is poor. More health education is needed to address this poor knowledge in order to equip them with the right information to positively affect their society in order to reduce the burden imposed by the disease.

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Table 1. Knowledge and Awareness of Diabetes MEllitus Amongst Nurshing Students

Question	Response				
Family History of DM	**Yes (28)**	**No (116)**			**n = 144**
Do you know somebody with DM	Yes (76)	No (68)			n = 144
What hormone lack causes diabetes	Insulin (122)	Glucagon (18)	Growth Hormone (2)	blank (2)	n = 144
Value in diagnosing DM	≥7mmol (57)	≥8mmol (43)	≥9mm (23)	blank (21)	n=144
DM is a chronic disease	Yes (121)	No (21)		blank (2)	(n = 141)
Commonest Type of DM	Type 2 (31)	Type 1 (83)	Gestational DM (17)	Blank (13)	(n=144)
DM can affect	Kidney (93)	Eye (63)	Nerves (17)	> One Organ (18)	
Obesity causes DM	Yes (96)	No (46)		Blank (2)	(n = 144)
Urine sugar can be used to diagnose DM	True (133)	False (11)			(n = 144)
Type 2 DM can be found in Adolescent	Yes (57)	No (77)			(n = 144)
Treatment of Diabetes	Diet (76)	Drugs (39)	Insulin (86)	>1 mode of Treatment (40)	
Symptom of DM	Excessive Urination (131)	Weight loss (50)	Excessive thirst (39)	Recurrent Infection (16)	>1 symptom (52)

COPING STRATEGIES IN IRANIAN FAMILIES: COPING AND SEVERITY OF BEHAVIOURAL PROBLEMS

ABSTRACT

Objective: The aim of this study is assessment of relationship among severity of behavioural problems, coping strategies and styles and investigation of role of gender differences in coping in the Iranian adolescent population.
Method: From six secondary schools students in three districts in Tehran 420 students were randomly selected. Participants were asked to complete SDQ and ACI scales. The collected data were analyzed with Pearson Correlation, Multiple Regression and Independent Sample T-test.
Results: A negative relationship between Solving the problem and Reference to Others coping styles and severity of behavioural disorder was observed. The results indicated that Solving the problem and Non-productive Coping styles (and consequently coping strategies of these two coping styles) can significantly predict severity of behavioural problems. No gender differences in coping were seen.
Discussion: Role of coping in forming behavioural problems for professionals, education systems and families was discussed.

Keywords: behavioural problems; coping styles; coping strategies; gender differences; adolescents, students, Iran

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Introduction

There is growing interest in identifying young children who are at risk for developing behavioural problems. This interest is largely driven by research evidence that shows young children who exhibit behaviour problems, such as aggression and attention difficulties, are at increased risk for continued behavioural difficulties in later childhood and adolescence *(Campbell & Ewing, 1990; White, Moffit, Earls, Robins, & Silva, 1990)*. Moreover, children who have an earlier onset of conduct problems are more likely to demonstrate an increased chronicity and severity of delinquent behaviours than the youth whose onset of conduct problems appears later *(Lahey et al., 1999; Tolan & Thomas, 1995)*.

Given the early onset and relative stability of certain types of behavioural problems, it is important to identify factors that contribute to the emergence of behavioural difficulties in young children for the purpose of early identification and preventive efforts.

Coping is described by *Lazarus and Folkman (1984)* as effortful cognitive and behavioural responses to stressful situations. Coping responses include actions to alter the stressor (problem-focused coping) and to regulate the emotional arousal associated with or evoked by the stressor (emotion-focusing coping). The successful utilization of coping responses facilitates resilience and adaptation to stressful situations *(Garmezy, 1987)*.

Coping is a multidimensional concept with at least two broad categories: coping styles and coping strategies. Coping styles indicate stable dispositions and patterns of responses that people use to deal with difficulties. Arising from this approach are studies conducted to examine the various typologies of coping styles found in individuals. This approach has been heavily criticized for ignoring the idea that coping responses are more situation-specific and that people cope with different situations using different strategies. Lazarus and Folkman (1984) have suggested two broad types of coping strategies: problem-focused and emotion-focused. Problem-focused coping strategies are used to solve an existing problem by either changing the situation, one's behaviour, or both. Emotion-focused coping strategies are employed to regulate emotional reactions or to make one feel better without actually solving the problem. Other researchers have broadened the concept of coping strategies to encompass at least the following elements: problem solving or direct action strategies, cognitive strategies such as positive thinking, avoidance or resignation strategies, and strategies that draw on resources from others such as help-seeking strategies *(Wong, Leung & On So, 2001)*.

Although every change, whether big or small, is stressful and placing demands on the individuals to cope, these changes are not bad or unpleasant at all times. In fact, it may be said that existence of

psychological stressors and even severity of them is not per se dysfunctional and maladaptive; what is important is the way or ways used to cope with stressors. Therefore, the strategies that individuals choose are part of their vulnerability profile. Along with this idea, *Anda et al., (1991)* take the increasing number of adolescents that commit suicide or abuse drugs as evidence of the increasing stress of this group and insufficiency of their coping strategies.

Relationship between coping and mental health is a relatively well-researched topic in the literature; however the relationship between coping and behavioural problems in children and adolescents is less explored. This is particularly so in Middle East societies.

Some researchers indicated that the use of approach coping, that includes problem-focusing and emotion-focusing, is less related to negative emotions than avoidance strategies *(Gomez, 1998; Halpern, 2004)*. Between approach coping, the relationship between application of emotion focusing strategies and less mental health has been a recurrent finding *(Aldwin and Revenson, 1987)* and in contrast with it, the relationship between use of problem focusing strategies and more mental health *(Aldwin and Revenson, 1987; Herman-Stahl, Stemmler & Peterson, 1995; Kavsek & Seiffge-Krenke, 1996)*. In other words, within one range, problem-focusing coping has been observed to be related to mental health more than emotion-focusing coping which is itself in turn more than avoidance.

It is explored that there are positive links between active strategies such as problem-solving, rational analysis and information seeking with higher mental health *(Herman-Stahl, Stemmler & Peterson, 1995; Kavsek & Seiffge-Krenke, 1996)*, and among passive coping strategies such as avoidance, denial and feeling repression with more life stress *(Kavsek & Seiffge-Krenke, 1996; Simoni & Paterson, 1997; Strivastava, 1991)*.

In the study of Elgar, *Arlett and Groves (2003)* on high school adolescents, there was a positive relation between approach strategies and externalized behavioural problems (such as hyperactivity, aggressive and disruptive behaviors) but no relationship with internalized behavioural problems (such as depression and anxiety). Of course, it should be noted that in this research emotion-focusing and problem-focusing strategies were held under a general class entitled approach strategies. Thus separate relations among all of these strategies with behavioural problems were not assessed. In fact, as approach strategies, whether problem-focusing or emotion-focusing, demand more act and performance on environment than avoidance strategies; if the ways of approaching are maladaptive, such approach strategies can indicate themselves as externalized behavioural problems.

Compas, Maclcarne, and Fondacaro (1988) reported that older children and adolescents who used problem-focused coping in response to self-identified interpersonal stressors had more positive emotional and behavioural outcomes, whereas those who used emotion-focused coping strategies, such as behavioural self-soothing, emotion venting, and aggressive actions, had greater behavioural problems.

The work of *Sandler, Tein, Mehta and Ayers (2000)* showed that for chronic events, avoidant forms of coping may provide immediate relief, but if used exclusively, these strategies are likely to lead to greater internalizing problems. Similarly, *Steele, Forehand, and Armistead (1997)* reported that among children who are coping with parental chronic illness, active/approach coping was related to lower psychological problems, and avoidant coping with increased overall problems and internalizing problems.

Windle and Windle (1996) found a positive link between emotion focusing coping and depression in adolescents. In a research *(Halpern, 2004)* on preschool children, general coping efforts and problem approach coping were negatively related to behavioural problems, but general low score in coping scale was positively related.

Aldwin and Revenson (1987) concluded that problem-focusing coping acts were a psychological buffer against stress. They observed also, that strategies such as avoidance, fantasy and blaming were more related to psychological symptoms. It has also been found that maladaptive coping is related to serious problems such as drug abuse *(Wills & Hirky, 1996)*.

Gender difference in coping has been a well-researched issue in the literature. Although some researchers have found that women use more emotion-focused strategies *(e.g. Davila, Hammen, Burge, Paley, & Daley, 1995; Olah, 1995)* and more avoidance coping *(Gomez, 1998)* than men, other studies have found no gender differences in coping *(Compas, Maclcarne, and Fondacaro, 1988; Armistead et al., 1990; Gore, Aseltine, & Colton, 1992)*. Such inconsistencies between studies underscore the need for further research on whether males and females differ in how they experience and respond to stress.

The first aim of this research was to investigate the relationship between behavioural problems severity, coping styles and coping strategies, thus predicting the effect of coping in severity of behavioural problems. The secondary aim was to assess the role of gender differences in coping.

Methods

Participants. The population of this research was a secondary school in Iran. The secondary school included grades 6 to 9, and ages almost 11-12 until 14-15 years old- students in Tehran city (Capital of Iran). For sampling three areas (areas 1, 6, 16) formed the research sample, each of which three girls and three boy schools were chosen. From each school three classes were chosen and from every class 25 students were selected (all stages in random). In this way, the sample was really comprehensive. Data was gathered from 450 students and questionnaires of 30 students

were excluded because of faults in completion. Ultimately data from 420 were analyzed. The sample included 225 (53/6%) females and 195 males (46/4%) and respectively 37/4, 29/3 and 33/3 percent from areas 1, 6, 16 of Tehran.

Tools. An anonymous pencil and paper questionnaire was administered to participants which contained two separate scales for the measurement of behavioural problems and coping:

1) Strength and Difficulties Questionnaire (SDQ): SDQ is a relatively new questionnaire about behavioural problems that was made in 1997 by Goodman according to ICD-10. It has five subscales including emotional symptoms, conduct problems, hyperactivity-attention deficit, peer problems and pro-social behaviours. It has three forms; teacher, parent and self-report that are used for 3 to 16-year-old children and adolescents. Although it has a shorter life than other recognized questionnaires such as CBCL or YSR, it has the same psychometric characteristics and some advantages such as: fewer items (25), yet holds the same sensitivity (Becker et al., 2004), good correlation with YSR (Koskelainen, Sourander, & Kaljonen, 2000), good reliability (Becker et al., 2004: Goodman, Meltzer & Bailey, 1998) and according to ICD-10.

In this research a self-report form was used. Severity of every adolescent's behavioural problems was calculated by adding the psychological signs and/or symptoms that a student affirmed about him/her self. Participants were asked to answer the items about their states during the last six month on a Likert-type scale ranging from zero to two, with zero being "not true", one being "somewhat true" and two being "certainly true".

2) Adolescent Coping Inventory (ACI): ACI was made by Frydenberg and Lewis (1993) to assess 12 to 18-year-old adolescents' coping styles and strategies. Rarely is there a coping scale comparable to ACI in comprehensiveness. The form of ACI used in the present research assesses 18 strategies in 3 general styles. The first style, that is called solving the problem, includes eight strategies: seek social support, focus on solving the problem, physical recreation, seek relaxing diversions, invest in close friends, seek to belong, work hard and achieve and focus on the positive. This style of coping indicates an active and adoptive approach to problems. The second style is Reference to Others that includes four strategies; seek social support, seek professional help, seek spiritual support and social action. Use of these strategies shows that a person asks for help from friends, professionals or spiritual powers to overcome his/her problems. The third style is Non-productive Coping that involves eight strategies: seek to belong, worry, wishful thinking, tension reduction, ignore the problem, self-blame, keep to self and not cope. These strategies are those that may be called maladaptive avoidance strategies and are empirically related to inability in adjustment. Frydenberg and Lewis have found 0.44 to 0.84 correlations for test-retest reliability of this test after two weeks. In the present research, Cronbach's alpha of total scale was calculated 0.87 and for three subscales; Solving the Problem, Non-productive Coping and Reference to Others were respectively 0.80, 0.77 and 0.78.

Participants were asked to express how much they used these strategies. They should express their opinion about items on a five Likert-type scale ranging from one "I do not do it" to five "I always do it".

Results

In order to assess the relations among severity of behavioural problems with coping strategies and styles, Pearson correlation was used, and results are shown in Table 1.

As shown in Table 1 there are negative relationships between Solving the Problem coping style and severity of behavioural problems ($r = -0.49$, $p<0.001$) and also between Reference to Others coping style with severity of behavioural problems ($r = -0.32$, $p<0.001$). There are also negative relationships among strategies of these two styles and severity of behavioural problems. Among Non-productive Coping strategies wishful thinking and not cope strategies have negative relationships with severity of behavioural problems. There is also a positive link ($r = 0.21$, $p<0.001$) between tension reduction (a Non-productive Coping strategy) and severity of behavioural problems, but there is no relation between Non-productive Coping style and severity of behavioural problems. In other words, the more use of Solving the Problem and Reference to Others coping styles, and consequently strategies of these two styles, the fewer symptoms of behavioural problems reported by participants.

Multiple Regression Analysis (stepwise method) was conducted to test predicting effect of coping styles on the severity of behavioural problems.

The results are shown in Table 2.

The regressions testing coping styles as predictors (Table 2) are statistically significant for severity of behavioural problems ($R= 0.53$, $F= 83/618$, $p< 0.000$). Selected coping styles are Non-productive Coping and Solving the Problem. Together these predictors contributed 28 % of the variance to the prediction of behavioural problems that, in case of generalization, will be 0.28 ($R2Adj = 0.283$). From these styles, Beta Coefficient of Non-productive Coping is positive ($Beta = 0.223$, $p<0.000$) and that of Solving the Problem is negative ($Beta = -0.591$, $p<0.000$). In summary, the more use of Solving the Problem, the fewer behavioural problems, symptoms, and the greater application of Non-productive Coping, the more behavioural problems symptoms reported by students.

To answer more concisely, that exactly which coping strategies can predict severity of behavioural problems, coping strategies and behavioural problems were analyzed by Multiple Regression Analysis (stepwise method was used) the results of which are shown in Table 3.

As the above table shows, the regressions testing coping strategies as predictors are statistically significant for severity of behavioural

problems (R= 0.55, F= 26/117, p< 0.000). Selected coping strategies are physical recreation, work hard and achieve, seek social support, seek relaxing diversions, not cope, focus on the positive and finally tension reduction. Together, these predictors contributed 30 % of the variance to the prediction of severity of behavioural problems that, in the case of generalization, it will be 0.29 (R2Adj = 0.296). From these strategies, Beta Coefficients of not cope and tension reduction strategies are positive and for others are negative. In summary, the higher use of physical recreation, work hard and achieve, seek social support, seek relaxing diversions and focus on the positive strategies, the fewer behavioural problems symptoms reported and the greater application of not cope and tension reduction strategies, the more behavioural problems symptoms. To examine gender differences in coping styles, Independent Sample t-test was used the results of which are shown in Table 4.

As it is shown, there is not any difference between genders in every coping styles or general coping attempts (sum of numbers in all of coping styles).

Discussion

The relationship between coping and behavioural problems found in this research is congruent with the results of many other researchers conducted in children and adolescents (e.g., Compas, Malcarne & Fondacaro, 1988; Gomez, 1998; Halpern, 2004; Windle & Windle, 1996), and also congruent with research that was conducted about the relations between mental health and coping in adults *(e.g., Aldwin & Revenson, 1987; Herman-Stahl, Stemmler & Peterson, 1995; Chang et. al., 2006; Law, 2003; Wong, Leung, & On So, 2001)*. Similar to some of the studies that have assessed gender differences in coping responses to stressful or negative situations *(e.g., Altshuler & Ruble, 1989; Bernzweig, Eisenberg, & Fabes, 1993; Iskandar et al., 1995)*, this study indicates that boys and girls did not differ in their coping responses.

Almost in every way that we want to see coping, we can say that it has two components: a cognitive and a behavioural component. The cognitive component encompasses an interpretative part that includes a person's beliefs system about identity of stress, his/her ability to expose, and the way he/she should apply. Lazarus and Folkman (1984) emphasise the role of appraisal and reappraisal [cognitive component] in the face of stressing situations. They believe that our emotions are results of our receiving information. It is obvious that a person's beliefs about stress and their ability can widely change the way the person responds, that is, his/her behavioural component of their coping responses. According to the above, we can say coping in the first place can moderate between environmental stressors and responses by a cognitive process, although it includes behavioural components as well. As individual's responses to situations can be defined partly as a persons' mental health, and also, as they can result in some consequences related to mental health, we can thus replace our inference by: coping can moderate between environmental stressors and mental health. It is not a new inference and in fact there are findings that support its empirical base *(e.g., Halpern, 2004; Wang & Scott, 2002)*. For example Halpern (2004) found that coping acts as a moderating effect between family conflicts and externalized behavioural problems in children. In other words, it is assumed that the relation between mental health and coping is due to moderation effect of coping on the perception and reaction to environmental stressors. While adoptive coping can cause more adoptive perception and response, maladaptive coping can reverse it.

However coping's effects on mental health, the results of research such as this research implies, that adoptive or maladaptive coping are among important factors concerning child and adolescent mental health. The results of research such as the present research implies to us that the child's inability to generate constructive coping strategies may provide an early risk factor for behavioural problems.

Parents and families should review their duties regarding their children. Parenting duties not only include providing food and clothing, but also includes teaching more efficient strategies to cope better with situations in an increasingly more complex and challenging society. Without opportunities to practice coping skills, children and adolescents may be less equiped to manage the challenges that await them later in life.

These results emphasise also on the role of educational systems, not only as entities that teach reading and writing skills to children, but also help foster a child's aptitudes to grow up with more healthy coping styles and, consequently a more healthy personality.

Results of this research about gender differences in coping replicates results of other studies that have found no gender differences in coping *(Compas, Maclcarne, and Fondacaro, 1988; Armistead et al., 1990; Gore, Aseltine, & Colton, 1992)*. Although no gender difference was found in adolescent's reports of coping in response to stressful events, girls and boys may utilize the same strategies differently in real world in stressing situations. Loss of gender difference in coping in this research can also be related to the age range of the sample of present research. Differential reinforcements have been one of the assumed causes for observing gender differences in coping *(Matheny, Ashby, and Cupp, 2005)*. Adolescent males and females in this research may not have differential reinforcements for using specific coping as much as adults do, because of their lower ages. Therefore, results about gender differences in coping such as in this study may be more age-related rather than generalized. Considering inconsistent results about gender differences in coping, it is possible that, there was more complex relation between coping and gender.

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Table1: Correlations of intensity of behavioural disorder and coping strategies/styles

		Intensity of Behavioural disorder
Coping strategies	seek social support	-0.32**
	focus on solving the problems	-0.15**
	work hard and achieve	
	worry	-0.37**
	invest in close friends	0.07
	seek to belong	-0.19**
	wishful thinking	-0.26**
	not cope	-0.17**
	tension reduction	-0.17**
	social action	0.21**
	ignore the problem	-0.14**
	self-blame	-0.09
	keep to self	0.05
	seek spiritual support	0.05
	focus on the positive	-0.20**
	seek professional help	-0.31**
	seek relaxing diversions	-0.27**
	physical recreation	-0.34**
		-0.38**
Coping strategies	Solving the Problem	-0.49**
	Non-productive Coping	0.03
	Reference to Others	-0.32**

p<0.01, p<0.001***

Table 2: Summary of regression analyses (stepwise method) for coping styles predicting intensity of behavioural disorder

	R	R^2	R^2_{Adj}	B	SEB	Beta	t	p
Variables	0.535**	0.286	0.283					
Constant				28/628	1/632	-	17/537	0.000
1- Solving the Problem				-0.040	0.003	-0.591	-12/911	0.000
2- Non-productive Coping				0.015	0.003	0.223	4/863	0.000

*p<0.000***

Table 3: Summary of regression analyses (stepwise method) for coping strategies predicting intensity of behavioural disorder

	R	R^2	R^2_{Adj}	B	SEB	Beta	t	p
Variables	0.554**	0.307	0.296					
constant				27/244	1/695	-	16/071	0.000
1- physical recreation				-0.039	0.012	-0.16	-3/262	0.001
2- work hard and achieve				-0.055	0.019	-0.142	-2/879	0.004
3- seek social support				-0.063	0.016	-0.174	-4.018	0.000
4- seek relaxing diversions				-0.048	0.013	-0.181	-3/806	0.000
5- not cope				0.042	0.016	0.113	2/539	0.011
6- focus on the positive				-0.038	0.017	-0.108	-2/243	0.025
7- tension reduction				0.037	0.017	0.104	2/239	0.026

*p<0.000***

Table 4: Results of Independent sample t-test between genders in coping styles

variable	sample	mean	standard deviation	t	df	p
Solving the Problem	Male	529/087	81/46	1/721	418	0.086
	Female	515/577	79/11			
Non-productive Coping	Male	442/800	81/95	-0.187	418	0.852
	Female	444/240	75/71			
Reference to Others	Male	256/169	50/24	1/606	418	0.109
	Female	248/640	45/79			
General coping attempts	Male	1228/056	174/63	1/202	418	0.230
	Female	1208/457	159/42			

RESIDENTIAL FIELD SITE TRAINING: BANGLADESH APPROACH TO COMMUNITY-BASED EDUCATION TO DEVELOP GENERIC SKILLS IN TOMORROWS' DOCTORS

ABSTRACT

Background and Objectives: Residential field site training (RFST) is an approach to community based education (CBE) in undergraduate medical curriculum in Bangladesh. Hospital-based education is no longer the only place to train doctors for the 21st century as it fails to develop generic skills of doctors. Society expects tomorrows' doctors should be a good care provider, decision maker, communicator, leader and manager, which are the generic skills and have been advocated by WHO, as five star doctors. The objective of this paper is to identify the students and teachers' perceptions of RFST.
Methods: It was a questionnaire survey carried out among 4th year undergraduate medical students and teachers of Comilla Medical College, Bangladesh, during the RFST programme in 2001. Data was collected using a common questionnaire from a sample of 40 students and 24 teachers who participated in RFST.
Results: Most of the students (78-98%) and teachers (88-96%) felt that RFST provides students an opportunity to aware of common rural health problems, develop a caring attitudes and assists to develop their generic skills.
Conclusion: As an approach to CBE, RFST provides a real life exposure and helps to develop generic skills in future doctors. CBE requires a close collaboration between health and educational administration and should not be seen as a separate entity. Resources and their proper utilization are important for an effective CBE.

Key words: residential field site training, generic skills development, tomorrows' doctors.

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Introduction

Medical education is in a process of constant change[1,2] and internationally it is recognized that undergraduate medical education must adapt to changing needs.[3] Many factors may influence the outcome of education such as educator, educational material, educational foyer such as lecture rooms,[4] educational settings like hospital based, community based etc. Community-based education (CBE) is an important strategy of WHO in the education of health personnel for achieving the aims of primary health care[5] and thereby health for all. Traditional hospitals, which are gradually turning into a huge intensive care unit are no longer treated as the only or best places to train doctors for the 21st century[2,6] as they fail to meet the needs of the society. There is a growing recognition that in addition to strong scientific knowledge and excellent clinical skills, the doctors should possess generic skills and be able to communicate effectively with patients, patients' families and colleagues; act in a professional manner; be aware of socio-cultural diversities, values, prejudices etc. and provide care with understanding of those values and dimensions of patient's lives.[7] Society expects tomorrow's doctor should be a good care provider, decision maker, communicator, leader and manager, the characteristics which have been advocated by World Health Organization (WHO) as five star doctors.[8]

Residential field site training (RFST) is an approach to community-based education in undergraduate medical education in Bangladesh, one of the most densely populated developing countries in the world located in the South Asia region. Bangladesh gives special priority to economic, social and health service development like other developing countries. The undergraduate medical curriculum of Bangladesh has been changed to community based by the Center for Medical Education Dhaka in 1988, and it has been implemented since 1990 under the guidance of Further Improvement of Medical Colleges Project. The ultimate aim of RFST is to teach tomorrow's doctors in the context of their everyday life where they have to practice in future after graduation. The country produces medical graduates for its health service delivery through seventeen public medical colleges including nine new ones. Some private medical colleges are also functioning to produce medical graduates. The undergraduate medical curriculum in Bangladesh consists of three phases over a duration of five years leading to a MBBS degree. Phase- I comprises year 1 and 2, phase- II comprises year 3 and 4 and phase-III comprises year 5. Recently the curriculum was reviewed again and phase-I consolidated to one and a half years, phase-II remains as it is, i.e. two years and phase-III expanded to one and a half years. In phase I,

basic science subjects are taught mainly. Para-clinical and clinical subjects are taught from phase II onwards. Students have to appear at three professional examinations at the end of each phase. In between, there are formative assessments as well. The 6th year is the internship year in which the interns attend ward rounds, take part in management of patient care and do the roster duty under the supervision of a consultant.

During their study in phase II, year 4, every medical student has to reside two weeks in a Thana Health Complex (THC) for RFST under the guidance of the Community Medicine Department. THCs are the basic units of primary health care service centers. Students are placed in an affiliated THC of the respective medical colleges under the Thana Health and Family Planning Officer (TH&FPO), who is the head of THC. They are placed usually in a group of around 20-24 students, which are further subdivided into two sub groups. The two week period is divided into one clinical medicine week and the other community medicine week. Students of one sub group join the clinical medicine week and the other subgroup join the community medicine week and at the end of the week they rotate. One teacher from the community medicine department usually stays at the THC by rotation along with the students to guide them. During clinical medicine week, students visit different sections of THC and observe the functions of each section. Case discussions are held in the morning with in-patients as well as outpatients. According to a pre-prepared schedule, senior teachers from the respective disciplines of respective Medical Colleges and personnel of THC facilitate students during clinical medicine week. In the evening group discussions are held among the students and faculty focusing on the student's experiences, and what they already observed and discussed with academics in the morning. During Community medicine week, students do a survey on the socio-demographic structure of rural families. During their survey they are divided into further smaller groups. Each student has to fill out five pre-prepared questionnaires by visiting five rural families. Before home visits of rural families, students are aware of social and religious sensitive issues of families. Teachers of Community Medicine and field level staff of THC guided the students during their survey. They also visit different rural health sub centers (grass root levels health posts), talk to different domiciliary health and family planning workers, traditional birth attendants (TBA) and other personnel engaged in community development activities. In the evening / night students unite together in a community hall and share their experiences. Each of the students compiled and analyzed their data first individually, then by subgroups and finally by the whole group. Students present their survey findings by organizing a seminar at the closing day of RFST program where institutional heads of both the campus (Medical College) and Community (THC), with other facilitators, are present.

For better group functioning, students usually form three committees, namely general committee responsible for overall supervision of the students, scientific and cultural committee responsible for organization of seminars and other related matters and a committee responsible for food management for the students. Each committee usually comprises one convener and two members, one from the males and the other from the females. This study was designed to investigate the perceptions of students and teachers about RFST as an approach to CBE.

Methods

It was a cross sectional questionnaire survey carried out among all the 4th year undergraduate medical students and all the teachers who participated in RFST. The study was conducted in 2001 at Laksham THC, which is an affiliated primary health care center of Comilla Medical College, under the University of Chittagong in Bangladesh. Though recently four more new public medical colleges were established in Bangladesh, during this study period, Comilla Medical College was one of the then new five established govt. medical colleges where every year new student intake was 50. However, this intake has now increased to 100 students every year. This study was done on the 6th batch / intake of Comilla Medical College, and comprises 40 students while they were in year-4 and 24 teachers who facilitated the students during RFST. Working as a head of the department of Community Medicine at Comilla Medical College, Bangladesh in 2001 the 1st author had to plan, implement and evaluate the whole RFST program and as such this study was carried out. Data was collected from both students and teachers utilizing a common questionnaire that contained different attributes of RFST. A rating scale in the questionnaire was used ranging from 1- 5, where 1 rated as strongly disagrees and 5 rates as strongly agree. The data was then compiled and analyzed.

Results

Table 1 shows the students' perception of RFST where 90% of the students opined that RFST helps them to develop awareness on common health problems of rural community and 97.5% felt that they learn group management and team building skills. As a result of participation in RFST, 77.5% students felt that it helps in the development of their positive caring attitude towards the rural community, while 95% of students thought that RFST helps them to develop their communication skills and reduce the gap between teacher and students. According to 87.5% students RFST gave them a real life exposure and 77.5% opined that RFST gave them the flavors of education in a different setting.

Table 2 represented the teachers' perspective, where 91.7% facilitators stated that RFST helps the students to be aware of common health problems of the rural community and to learn group management and team building skills. In the development of positive caring attitude, 87.5% of tutors opined

that RFST provides an opportunity to students to develop a positive caring attitude towards the rural community. Ninety six percent of teachers felt that RFST assists the students to develop communication skills, 98.5% believed that it provides an opportunity to reduce the gap between teacher and students while 87.5% opined that it gave the students a real life exposure and tested the flavors of education in a different setting.

Discussion

Most of the students (90%, Table 1) and teachers (91.7%, Table 2) in the present study agreed that RFST offers the students an opportunity to develop awareness on the common health problems of diverse rural people. Once students have better awareness and understanding of the diverse community problems, they will be in a better position to make decisions in handling those problems later in their professional life.[9] RFST exposed the students to a real life situation through an opportunity to come into close contact with rural people, which helped them to be aware of their norms, beliefs, prejudices, financial problems, housing problems, illiteracy, violence, ignorance etc. and also be aware of the role of these factors in the causation and management of illness.

During RFST, students had to work in a different committee like general committee, food committee, scientific committee etc. with different students and having different responsibilities and also had to work with multi-professionals, which helped them to develop group management, team building and leadership skills, which are generic skills and should be possessed by every future doctor. According to 97.5% of students (Table 1) and 91.7% of teachers (Table 2) RFST offered the students the ability to gain the skills of working in groups and team management. Jira[5] pointed out that to address the community health problems, future doctors should be able to work as a member of the team with their responsibilities and be able to share knowledge and skills with other members of the team. This finding of RFST has a positive aspect to meet the community health problems.

To meet the expectation of society, development of mindset and attitudes of "tomorrow's doctors" are essential. Attitudinal development can be best taught in the community educational setting, exposing students to real life situations. Most of the respondents (77.5% students, Table 1) (87.5% teachers, Table 2) of this study were of the opinion that RFST offered the students an opportunity to develop a positive caring attitude towards the rural community.

Communication skills are an essential component of medical competency and good communication improves care and enhances patient satisfaction, compliance and health outcomes.[10-16] Many studies[17] have reported the importance of effective communication in improving patient health outcomes,[13] in fostering patient compliance to treatment,[18] and in improving patient satisfaction with the medical encounter.[19,20] Through RFST, students are encouraged to develop a sensitive and empathic response to the needs and circumstances of people in the community. To complement this awareness, students are expected to develop generic skills of observation, reflection and communication. Most of the students (95%) and teachers (95.8%) in this study opined that RFST offered the students an opportunity to improve their communication skills. Communication skills with different sources and the different communities and with people of varying cultures are important factors in determining the success of communication in any situation. The ability to communicate effectively is an essential element of a physician's clinical expertise.[21]

An important consideration in a teaching learning session is arousal or excitement that implies a state of readiness of the learner to accept new information.[22,23] This study revealed that 80% (Table 1) of the students and 95.8% (Table 2) of the teachers felt that RFST aroused students' interest and they took the flavors of education in a different setting. Motivation is a key factor for learning that implies a willingness to direct its activity to a specific task.(22) The present study revealed that 95% (Table 1) of the students and 95.8% (Table 2) of the teachers believed that students were motivated as the gap between students and teachers was reduced through RFST.

RFST did not waste time, was reported by 60% students (Table 1) and 58% (Table 2) teachers. Although 8% of teachers opined that RFST wasted their time, 17% of teachers were undecided and the other 17% did not respond to this attribute of study (Table 2). On the other hand, 27.5% of students opined that RFST causes wastage of their time while 12.5% were not sure and undecided (Table 1). Actually while conducting this programme, the comments by some sections of the teacher population as "RFST is wastage of time", aroused the interest of 1st author to include this statement in the instrument as a study element. RFST or any other programme, whether wasting time or not, depends on how and what strategies are adapted to implement the programme and also the mindset of institutional head to value the programme and mobilization of the resources for the programme.

A similar study conducted in 2003 at Universiti Sains Malaysia, named as Community and Family Case Study (CFCS) as an approach to CBE revealed similar findings to the present study. The essential characteristic of a community based curriculum is the distribution of community-based learning activities throughout the duration of entire curriculum.[24] There is no universal solution on how to approach CBE. It is the situation, program, strategies and resources of a particular country, which dictate how the objectives are incorporated. However, allocation of resources in terms of man, money, materials and their proper utilization are important factors for an effective programme. Since CBE is based on the practice of health care, it requires the close collaboration of health and

educational administrations and integrated policies need to be outlined through inter-institutional consultation and coordination.[24]

Conclusion

RFST as an approach to CBE arouses students' interest and provides an opportunity to the students to have close contact with rural people and be aware of their norms, beliefs, prejudices, financial problems, housing problems, illiteracy, violence, ignorance etc. and also aware of the role of these factors in the causation and management of illness. Exposure to the real life situations of rural people through RFST, students have to work and behave in a certain way which helped them to develop their generic skills. Implementing an effective community based educational programme is not an easy task. It requires close collaboration between health and educational administrations and proper integration of inter-institutional consultation and coordination. A community based component in curriculum should not be seen as a separate entity by the policy makers. To get real benefit from CBE, it is important that the entire learning process and the institutional involvement should be programmed as one entity. The way in which objectives are incorporated into the curriculum will depend on the situation, program, strategies and resources of a particular country

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Table 1 Students' perception of RFST, n=40

RFST offered an opportunity to…	Agreed		Undecided		Disagreed	
	F	(%)	F	(%)	F	(%)
develop awareness on health problems of rural community	36	(90)	2	(5)	2	(5)
learn to work in group and team management	39	(97.5)	1	(2.5)	0	(0)
develop a positive caring attitude and to serve main bulk of population	31	(77.5)	2	(5)	7	(17.5)
learn communication skills	38	(95)	1	(2.5)	1	(2.5)
arouse student's interest in a different educational setting	32	(80)	2	(5)	6	(15)
reduce gap between student and teacher and the students were motivated	38	(95)	1	(2.5)	1	(2.5)
RFST was nothing but just the wastage of time	11	(27.5)	5	(12.5)	24	(60)

Table 2 Teachers' perception of RFST, n=24

RFST offered an opportunity to…	Agreed		Undecided		Disagreed		Not responded	
	F	(%)	F	(%)	F	(%)	F	(%)
develop awareness on health problems of rural community	22	(91.7)	1	(4.2)	1	(4.2)	0	(0)
learn to work in group and team management	22	(91.7)	1	(4.2)	1	(4.2)	0	(0)
develop a positive caring attitude and to serve main bulk of population	21	(87.5)	2	(8.3)	1	(4.2)	0	(0)
learn communication skills	23	(95.8)	1	(4.2)	0	(0)	0	(0)
arouse student's interest in a different educational setting	23	(95.8)	1	(4.2)	0	(0)	0	(0)
reduce gap between student and teacher and students were motivated	23	(95.8)	1	(4.2)	0	(0)	0	(0)
RFST was nothing but just the wastage of time	2	(8.34)	4	(16.67)	14	(58.32)	4	(16.67)