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In this issue of the journal we are publishing two review papers for nursing students from one nursing school to encourage the advance of nursing careers in the region.

A paper from Iran looked at the use of use of human breast milk for diaper rash in infants. The authors stressed that Diaper dermatitis is common in infants and is one of several acute inflammatory skin disorders caused either directly or indirectly by wearing of diapers. It can be treated by zinc oxide or petrolatum. Fifty babies under two years of age were randomly assigned to intervention and control groups (25 in each group). There were no significant differences between the two groups (HBM and zinc oxide ointment) with respect to lesion size, inflammation and intense erythema (wound), but there were significant differences between before and after (two stages) treatment by HBM and zinc oxide. The authors stressed that though not statistically significant, results favored use of topical breast milk to aid recovery of diaper rash. Therefore, it is recommended that topical breast milk is considered for treatment of diaper rash.

A paper from Bangladesh looked at existing Knowledge on HIV/AIDS of Women. The authors studied existing knowledge on HIV/AIDS of women at the border area in Bangladesh. A woman is depressed from before birth by gender preferences, and she faces various types of depression in her life during various ages. Women and girls are commonly discriminated against in terms of access to education, employment, credit, health care, land and inheritance. A woman can acquire HIV through unprotected sex with an infected partner, through receiving contaminated blood or through non-sterile instruments or medical procedures.

A second paper from Iran looked at the students' relationship between knowledge and attitude about using Ecstasy in public female's Pre- University centers in Tehran city. The authors stressed that recent evidence suggests that the use of the synthetic compound, 3,4 methylenedioxymethamphetamin, also known as "Ecstasy", has become progressively more prevalent among adolescents and young adult in all over the world.

In the second paper from Bangladesh the authors looked at the Birth Patterns of High-risk and Low-risk Childbearing of Bangladeshi Women: A Multivariate Statistical Analysis.

Out of 13 variables, 11 variables influence thigh-risk childbearing and only two variables influence low-risk childbearing. The significant variables which influence thigh-risk childbearing are: child loss experience, duration of conjugal life, education of women, place of residence, age at first birth, occupation of husband, women's working status, religion, duration of breastfeeding, education of husband, and spousal age difference. On the other hand, the variables that influence low-risk childbearing are age at first marriage and contraceptive use.

Two papers from Lebanon from the school of nursing report on Molecular Biology of Aging. One paper looked at the general theories of ageing and the second paper looked at the molecular biology of aging.

Finally a paper from Kuwait, looked at a Research proposal on The Effect of Health Literacy on Health Outcomes.

EXISTING KNOWLEDGE ON HIV/AIDS OF WOMEN AT THE BORDER AREA IN BANGLADESH

ABSTRACT

This paper studies existing knowledge on HIV/AIDS of women at the border area in Bangladesh. A woman is depressed from before her birth, by gender preference and she faces various types of depression in her life at various ages. Women and girls are commonly discriminated against in terms of access to education, employment, credit, health care, land and inheritance. A woman can acquire HIV through unprotected sex with an infected partner, through receiving contaminated blood or through non-sterile instruments or medical procedures.

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Introduction

Bangladesh is a low HIV prevalence country with several well-documented at risk groups, the most prominent of which is brothel-based sex workers and injecting drug users. Today's low level of HIV infection in our country does not guarantee low prevalence tomorrow. Experience teaches us that early epidemics do not show their magnitude at the beginning[1]. According to government statistics, a cumulative total of 874 cases of HIV/AIDS had been confirmed and reported as of 31st December 2006. A total of 240 AIDS cases were detected so far of which 109 had already died[2].

Many risk factors like, high prevalence of HIV in the neighboring countries, increased population movement both internal and external, lack of awareness of HIV infection, existence of commercial sex and MSM with multiple clients, high prevalence of STIs amongst the commercial sex workers, spread of HIV through bridging population (transport workers, drug users), the trend of rise of HIV among injecting drug users (IDUs), low condom use and lack of voluntary blood donation make Bangladesh vulnerable to HIV infection[3].

However, we must not adopt a complacent attitude in respect to these facts as our country has all the determinants for an explosive outbreak of an HIV/AIDS epidemic. Curses of poverty, illiteracy, ignorance, proximity of Bangladesh to the so-called 'Golden Triangle' & high prevalence of STDs, make our country seriously vulnerable.

Drug use increases the HIV risk and can start very early, for example, glue-sniffing by youngsters living or working on the streets. The danger of becoming infected with HIV by sharing injecting equipment is well known, and real.

Unemployment, slum housing, family fragility, frequent cross-border movement of people, lack of information, unsafe blood transfusion, physical and sexual abuse create a "risk environment" of violence for many young people in the region. In addition increased number of migrant workers, unsafe practice in health services, unsafe sex practices etc. movement of population, less use of condoms, polygamy, homosexuality, extra-marital relations, further increases the susceptibility[3].

Bangladesh behavioral surveillance survey (BSS) reports on several high-risk factors: (a) larger number of men buying sex than in other countries in Asia, (b) Low levels of knowledge about HIV/AIDS, (c) low perception of personal risk among vulnerable populations, and (d) low condom use rates among sex workers[1].

Rationality

Women are most vulnerable in this country for their low economic and social status; the inequality between men and women, and economic deprivation helps to drive the epidemic. Women and girls are commonly discriminated against in terms of access to education, employment, credit, health care, land and inheritance. A woman can acquire HIV through unprotected

sex with an infected partner, through receiving contaminated blood or through non-sterile instruments or medical procedures. However, HIV is usually introduced into the family through the woman's sexual partner. A government survey found that out of 216 new HIV positive cases identified in 2006, unemployed people were on top of the list at 39.35% followed by housewives at 21. 29% and businessmen at 10.18 percent[2]. It is noted that those unemployed and businessmen with HIV positives are risky for women, since HIV/AIDS is a sexually transmitted disease. Information on knowledge and on the level and intensity of risk behaviors related to HIV/AIDS is essential in identifying populations at most risk for HIV infection and in better understanding the dynamics of the epidemic. The indicators on knowledge and misconceptions are an important prerequisite for prevention programs to focus on increasing people's knowledge about sexual transmission, and, to overcome the misconceptions that act as a disincentive to behavior change[1].

Objectives of the Study

The major objective in this paper is to identify the knowledge on HIV/AIDS of women at the border area in Bangladesh. There will be specified some objectives such as,

1. To assess the knowledge about HIV/AIDS.
2. To assess the knowledge about the spread and prevention of HIV/AIDS.
3. To asses the knowledge about the groups vulnerable to AIDS.

Review of Literature

Bangladesh is considered a high-risk country for several reasons: the presence of covert multi-partner sexual activity and denial, the low level of knowledge and low condom use, unsafe professional blood donation, high incidence of self-reported sexually transmitted infections among vulnerable groups, coming back of expatriates working in different countries, and high levels of HIV/AIDS in the two neighbouring countries, India and Myanmar, all contribute to the spread of HIV[4-8,9]. On the other hand, the country's vulnerability is very high compared to other parts of South Asia and infection rates within the vulnerable groups are increasing, leading to an ever-greater possibility that the virus will spread to the general population[4,5,10]. In this critical situation, public awareness can play a dominating role preventing an HIV/AIDS epidemic[11]. But awareness level with knowledge of correct ways to avoid HIV/AIDS among the general people in Bangladesh is quite low. Among the men aged 15-54, 18% have never heard of HIV/AIDS, 24% have heard but don't know any correct ways to avoid it and only 58% know one or more correct ways to avoid the disease[12]. On the other hand, 40% ever-married women have never heard of HIV/AIDS, 19% have heard but don't know any correct ways to avoid it and only 41% know one or more correct ways to avoid the disease[12].

These situations have raised serious concern among the government and various stakeholders and they are seeking to increase the public awareness on HIV transmission and prevention. So, it is important to identify the reasons that are associated with level of awareness, which will be helpful in strengthening Govt./NGO/development-partner agencies' capacity for program planning, implementation, monitoring and evaluation regarding AIDS awareness. In this regard a few national and international researchers have made attempts to understand the reasons and come up with some explanations[11,13,14].

Methodology

This study is an explanatory research which is based on survey research method. It is also based on primary data and used a questionnaire for data collection. After data collection data were coded in the proper way and coded data entered into a well recognized statistical software SPSS (windows) and inputted data edited and cleaned. At last cleaned data was analyzed. Sample size was determined by using the following formula:

$$S = \frac{Z^2 P(1-P)}{d^2} = 384$$

S is the sample size for the population.

Z is the percentile of standard normal distribution determined by specified confidence level. It is 1.96 for 95% confidence level.

d is the desired precision considered as 5%.

P = 0.50; about 50% are women in Bangladesh

1-P = 1-0.50 = 0.50

A total of 384 women were interviewed in this study. A quantitative survey was conducted from among 384 women living in Banapole land port area of Bangladesh by using a systematic sampling method.

Finding and Discussion

All the respondents were female in this study; the mean age was 23.40 years and maximum numbers of respondent (62.0%) were aged below 25. Around 51.3 percent of respondents were currently married. Respondents had a low level of education, with 15.6 percent of women study respondents who had completed secondary level and 45.6% had completed primary level. (Table 1)

Women were tested on a variety of general knowledge issues relating to HIV/AIDS. Almost two-third (65.9 per cent) have heard about AIDS. Out of them, most women (87.0 per cent) know that AIDS is a serious disease, half (50.2) of women know that it has no treatment, more than two-fifths (43.5 per cent) of women know that it is a disease created by HIV virus and almost the same number of women (41.9 per cent) women know that it means death. Only one fourth (26.9) women know that, when a person has HIV/AIDS, his/her body is unable to defend itself against common illnesses and diseases.

Most women (75.1 per cent) identified unsafe sexual activities, almost seven tenths (69.2 per cent) cited the sharing of unsafe

drug needles, almost half (45.1 per cent) and more than two-fifths (43.9 per cent) indicated that it could be transmitted through blood transfusions. Approximately one in five provided more generic responses including that HIV is transmitted through infected mother to child (19.8 per cent). Approximately one-fifth (19.4 percent) were unable to provide an answer.

More than three-fourths (77.1 per cent) indicated that safer sex would be practiced primarily to reduce the risk of AIDS. More than half (55.7 per cent) of women indicated that avoiding risky sexual intercourse would help, almost half (44.7 percent) indicated that receiving blood after screening, two-fifths (40.3 per cent) cited sex with a reliable partner, almost two-fifth (36.8 percent indicated that safe needle use to prevent AIDS while almost two-fifths (17.8 per cent) said to avoid drugs and a few (5.9 percent) indicated that early treatment, if present, of sexually transmitted diseases. More than one-tenth (12.6 percent) were unable to provide an answer.

Respondents perceive that hand shaking, embracing, mild kissing, coughing, using the same bath room, and using the same pond are not risky behaviors of HIV/AIDS carriers (38.3, 36.0, 39.5 and 32.0 per cent, respectively). Excluding these behaviors, respondents indicated a wide range of other behaviors, such as to use same utensil (53.8 per cent), to sleep in the same bed (45.5 per cent), to play with an infected person (24.5 per cent) and to be bitten by a mosquito, fly and other insect bites are not risky. It is also mentioned that 12.6 per cent said that they don't know which behaviors are not risky.

The maximum number of women (64.4 per cent) indicated that rapid weight loss is the main symptom of AIDS. Respondents perceive suffering from a fever for a long time, severe illness, and swollen glands are the symptoms of AIDS (38.7, 32.0 and 25.7 per cent respectively). Excluding these symptoms, respondents indicated that suffering from long time diarrhea, unwillingness to take food and infection in the mouth are the symptoms of AIDS (17.0, 13.8 and 11.9 percent respectively).

Respondents perceived an infected person should be given healthy food, get regular treatment, regular exercise and avoid drugs (58.5, 49.8, 36.4 and 39.5 per cent, respectively). Excluding these respondents indicated an infected person should avoid mental and physical stress (14.2 per cent). It is also mentioned that 23.7 per cent said that they don't know what should be done for an infected person.

Respondents most often perceive sex worker, polygamy male and injecting drug users as groups that have been most affected by HIV/AIDS (79.1, 49.4 and 31.6 per cent, respectively). Excluding these specific groups, respondents indicated a wide range of other members of the population who have been affected by the disease. These include people engaging in polygamy female (26.1 per cent), truck driver (13.0 per cent), and homosexual person (5.5 per cent). It is also mentioned that 15.4 per cent said that they don't know who is vulnerable.

Conclusion

Almost two-thirds (65.9 per cent) of women have heard about AIDS. It indicates that a major portion of women have not ever heard about AIDS. Out of them, most women know that AIDS is a serious disease and it has no treatment; only one fourth of women know that, when a person has HIV/AIDS, his/her body is unable to defend itself against common illnesses and diseases.

Most women identified unsafe sexual activities, almost seven tenths cited the sharing of unsafe drug needles, almost half and more than two-fifths indicated that it could be transmitted through blood transfusions. Approximately one-fifth were unable to provide an answer. A maximum number of women indicated that safer sex would be practiced primarily to reduce the risk of AIDS. More than half of the women indicated that avoiding risky sexual intercourse, almost half indicated receiving blood after screening. More than one-tenth of women were unable to provide an answer. Respondents indicated a wide range of other behaviors such as to use the same utensil, to sleep in the same bed, to play with an infected person and to be bitten by a mosquito, fly and other insects are not risky. It is also mentioned that more than one-tenth of respondents said that they don't know which behaviors are not risky. A maximum number of women indicated that rapid weight loss is the main symptom of AIDS. Respondents perceive suffering from fever a long time, severe illness, and swollen glands are the symptoms of AIDS.

Respondents perceive an infected person should be taking healthy food, get regular treatment, regular exercise and avoid drugs. It is also mentioned that one fourth of respondents said that they don't know what should be done for an infected person. Respondents most often perceive sex worker, polygamy male and injecting drug users as groups that have been most affected by HIV/AIDS. It is also mentioned that more than one seventh of respondents said that they don't know who is vulnerable. From the above discussion, it is revealed that a maximum number of women know AIDS is a sexually transmitted disease and a large number of women didn't know aboutits spread, prevention, or what should be done for an infected person, symptoms, vulnerable groups, etc. of AIDS.

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Table 1: Distribution of the respondents by Background characteristics (n= 384)

Age	**Frequency**	**Percentage**
Less than 25	238	62.0
25-35	101	26.3
35 and above	45	11.7
Total	384	100.0
Mean	23.40	
SD	7.05	
Education		
Illiterate and can sign only	70	18.2
Primary incomplete	79	20.6
Primary complete and secondary incomplete	175	45.6
Secondary complete and above	60	15.6
Total	384	100.0
Marital status		
Married	197	51.3
Unmarried	187	48.7

Table 2. Distribution of general Knowledge about AIDS

	Frequency	**Percent**
Have heard of AIDS	253	65.9
Haven't heard of AIDS	131	34.1
Total	384	100.0
Knowledge about AIDS* (n= 253)		
AIDS is a disease created by HIV virus	110	43.5
It is a damage disease prevention system	68	26.9
AIDS is a serious disease	220	87.0
It has no treatment	127	50.2
Its means death	106	41.9

** Multiple responses*

Table 3. Distribution of knowledge about the spread of AIDS (n=253)

Factors	**Frequency**	**Percent**
From unsafe sexual activities	190	75.1
From sexual activity with infected person	114	45.1
From sharing unsafe needles	175	69.2
From blood transfusions	111	43.9
From infected mother to child	50	19.8
Don't know	49	19.4

** Multiple responses*

Table 4. Distribution of knowledge about prevention of AIDS (n=253)

Factors	**Frequency**	**Percent**
Safe sex (to use condom)	195	77.1
Sex with reliable partner	102	40.3
To avoid risky sexual activity	141	55.7
To take blood after screening	113	44.7
Safe needle use	93	36.8
To avoid drug (especially injectable drug)	45	17.8
Early treatment if present STD	15	5.9
Don't know	32	12.6

** Multiple responses*

Table 5. Distribution of knowledge about "How does AIDS not spread" (n=253)

Factors	**Frequency**	**Percent**
From hand shake, embracing, mild kiss	97	38.3
From cough	91	36.0
From using same utensil	136	53.8
From using same bathroom	100	39.5
From mosquito, fly and other insect bite	48	19.0
From playing with infected person	62	24.5
To sleep same bed	115	45.5
To bathe same pond	81	32.0
Don't know	32	12.6

** Multiple responses*

Table 6. Distribution of knowledge about symptoms of AIDS (n=253)

Factors	**Frequency**	**Percent**
Rapid weight loss	163	64.4
Suffer from fever long time	98	38.7
To expand gland	65	25.7
Suffer from diarrhea long time	43	17.0
Infection in mouth	30	11.9
Unwillingness to take food	35	13.8
Severe illness	81	32.0
Don't know	70	27.6

** Multiple responses*

Table 7. Distribution of knowledge about what should be done for an infected person (n=253)

Factors	**Frequency**	**Percent**
To take healthy diet	148	58.5
Regular exercise	92	36.4
To avoid drug	100	39.5
Avoid mental and physical stress	36	14.2
To get treatment regularly	126	49.8
Don't know	60	23.7

** Multiple responses*

Table 8. Distribution of knowledge about vulnerable groups of AIDS.

Factors	Frequency	Percent
Sex worker	200	79.1
Polygamy (male)	125	49.4
Polygamy (female)	66	26.1
Truck driver	33	13.0
Injecting drug user	80	31.6
Homosexual person	14	5.5
Don't know	39	15.4

** Multiple responses*

THE STUDENTS' RELATIONSHIP BETWEEN KNOWLEDGE AND ATTITUDE ABOUT USING ECSTASY IN PUBLIC FEMALE'S PRE- UNIVERSITY CENTERS OF ZONE 17 IN TEHRAN CITY IN THE YEAR 2007-2008

ABSTRACT

Introduction: Recent evidence suggests that the use of the synthetic compound, 3, 4 methylenedioxymethamphetamin, also known as "Ecstasy", has become progressively more prevalent among adolescents and young adults all over the world. Possessing stimulant and hallucinogenic properties, the popularity of ecstasy has been attributed to the euphoric-like effects that users experience. So, the aim of the present study is to determine the student's relationship between Knowledge and attitude about using Ecstasy, in public female's Pre- University centers of zone 17 in Tehran city in the year 2007-2008, for using its results in educational need assessments.

Methodology: This is a descriptive-analytic study which was done on 400 female Pre- University students of zone 17 in Tehran city. Samples were chosen via random classified Cluster sampling method and their Knowledge and attitude measured with a self-administered questionnaire, after validity and reliability, and then data analyzed with SPSS version 11.5.

Findings: Results showed that the majority of students (41%), had a low knowledge and (56%) negative attitude about using Ecstasy and there was a significant relationship between students' knowledge and their attitude about using Ecstasy)r=0/511) (p<0/005). Findings showed that there was a relationship between students' knowledge and attitude and some demographic characteristics.

Conclusion: Findings of this research showed that high school adolescents had a low knowledge about using Ecstasy. So, it is important to take appropriate action to increase at risk students' knowledge.

Key words: Knowledge, attitude, Ecstasy, Female students.

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Introduction

These days, there is an increasing tendency to use drugs, especially the synthetic compounds whuich have become progressively more prevalent among adolescents and young adults all over the world and it's individual, social, educational and cultural consequences as it has become one of the most serious and important problems in societies[1].

Amphetamines are an important group of chemical mind altering drugs which are classified as stimulants of central nervous system (CNS). One of the derivatives of this class which in recent years is being sold in Iran's illicit market, is Ecstasy or Adam. The latter drug has spread under the name of the "happiness" tablet and with the chemical name of methylenedioxymethamphetamin (MDMA)[2]. The use of this drug has generated new crises in Europe and the US since the 1980's when used in parties known as "Rave parties". The youth taking part in raves use the drug in order to be able to dance long hours to fast music, gain sufficient energy, feel "happy", experience a sharp sense of euphoria, increased levels of interest in forming relationships with others, heightened sense of alertness, and a deeper understanding of the music. Ecstasy has numerous negative side effects, including symptomatic impacts such as tachycardia, hypertension and increasing temperature, sweating, grinding teeth, hallucination, impaired vision, panic attacks and psychosis which in extreme cases can lead to arrhythmia, hyperthermia, acute renal failure, hepatic problems, coma and death[3].

The death rate due to ecstasy abuse has increased by 400% between 1998 and 1999 and between 1996 and 1999 incidents of ecstasy poisoning in Accident and Emergency departments worldwide has increased 9-fold, a rise from 319 cases to 2,850, with most of the victims being under 25 years of age[4]. Statistics show that 2.8 million young people worldwide have at least used the substance once in their lifetime with the highest consumption rate relating to the East and South East Asia, followed by Europe, Australia, and the USA. In statistics published by the US National Centre for the Study of Drug Abuse, ecstasy is one of the widest used agents amongst the youngsters in the country. In a study conducted in 1987 in Stanford University in the USA, 39% of the interviewees had used ecstasy[5].

In a study in Australia, 6.1% of those over 14 years of age had used ecstasy with the substance being the third most used illicit substance in the country after Hashish and Amphetamine. In Denmark, ecstasy was the most important and plentiful illicit street drug used in 2000. In Spain, 71% of those who took part, with an average age of 21 years, had used the substance at least once[6].

In Iran, where no wide-ranging studies have been conducted in this context, there are no published official statistics of users of hallucinating and synthetic substances. However, according to an estimate by the General Secretary of the Organisation for the Campaign against Drugs, there are 45-50 thousands users of ecstasy in Iran[5]. However, the evidence indicates that the real numbers are much higher. Furthermore, in recent years with the advent of internet and satellite channels, which in certain cases even advertise the use of such drugs,

the tendency of Iranian youth and adolescents towards risky behaviour is increasing rapidly[6].

Iran is the top ranking country for the use of mind altering drugs in the world[7] and 45% of its addicts are 25 years of age. In addition to the aforementioned facts, youngsters form a large proportion of the population pyramid in Iran and as the impact of health during adolescent years on the well-being on later stages of life is well known, the vulnerability of this age group with regards to seeking risky pursuits[8] in the context of the worrying increase of ecstasy use amongst them, is clear. The need for appropriate intervention programmes by a wide-range of social groups, in particular the healthcare providers is therefore, abundantly obvious, if the increase in the use of synthetic and chemical substances is to be curtailed. One of the important members of the healthcare teams are nurses who could utilise the information about the Knowledge and Attitude of youngsters at risk, to formulate preventative measures, and support relevant authorities to devise appropriate educational programmes. Thus they can play a role in improving the health of the nation. The current study was, therefore, undertaken to investigate the student's relationship between Knowledge and attitude about using Ecstasy in public female's Pre- University centers of zone 17 in Tehran city in the year 2007-2008 academic year.

Methods

This is an analytical-descriptive study to investigate the student's relationship between Knowledge and attitude about using Ecstasy in public female's Pre- University centers of zone 17 in Tehran city in the year 2007-2008. The 400 respondents were chosen through random cluster sampling method from the first to third year (14-17 years old) secondary school pupils in Education Area 17 of Tehran. Researchers obtained permission from Tehran University of Medical Sciences and Area 17 Education Authority in Tehran. Four secondary day schools for girls were selected at random; the corresponding head teachers were contacted, and permission was sought from the respondents. Data was gathered through completed written questionnaires comprising three sections, covering students' demographic and general information, and questions about their Knowledge and Attitude regarding ecstasy use.

Points 1 to 4 were assigned to responses to questions in the Knowledge section; marks were added for this section, where a maximum score of 24 was possible. The marks were normalised to 100% and three categories of "Good", "Average" and "Weak" were assigned to scores of >70%, 50%-70%, and <50% respectively. Similarly, in the Attitude section a total of 24 marks were attainable and responses were classified into three categories: >70%, 50%-70%, and <50% and these were assigned "Negative", "Average", and "Positive" respectively. Reliability and validity were verified by using content validity and Alpha - Cronbach method respectively, and the reliability of the questions was verified with a correlation coefficient of 70.5%. Descriptive statistics were utilised to obtain the averages, standard deviation and frequency tables, and inferential statistics including Chi Square and Pearson Tests was used to analyse the data.

Findings

The results indicated that 40.3% of the respondents were in the "16 years old" age group, with an average age of 15.7 years and the standard deviation of 0.956; and 42.7% were second year pupils and 83.3% of them were studying "humanities/social science". Considering their position among their siblings, they were mostly the first born in the family (35.5%) and the household size of 60.5% of them was between 3 to 5 persons. In a majority of cases (92.2%) both parents were living together in the same household and the father was the main breadwinner (93.3%). In addition, 46.4% of the respondents' fathers and 43% of their mothers were educated to below Secondary School diploma level (equivalent to 5 GCSE, A-C grade).

Regarding the family income, 35.5% of the respondents stated that their family's monthly income was sufficient. Also, 83.3% of respondents asserted that there are no drug users amongst their family members and 72% had no users amongst their friends.

Findings indicated that Knowledge level of a majority of respondents (41%) was "weak" (Table 1), and that 56% had a "Negative" Attitude towards ecstasy use (Table 2). The study showed that there is a positive relationship between Knowledge and Attitude ($r=0.511$, $p<0.001$).

Findings showed that there are positive relationships between students' knowledge and their educational field, father and mother's educational level, and getting health information by using radio, TV, books and magazines. There are also positive relationships between students' attitude and their age, educational level and getting health information from family members.

Discussion

The findings indicate that the largest percentage of students in this study had a "Weak" knowledge regarding ecstasy use. Mansourian, Pashaaee and Shojaayee-Rad (2005) showed that among the students of Tehran University of Medical Sciences who were resident in the student halls 37.4%, 34%, and 28.3% had "High", "Average" and "Low" knowledge levels regarding ecstasy tablets[9], which is in contrast to the findings of the current study.

However, it should be pointed out that advent of ecstasy is a new phenomenon in Iran which has only recently come to the fore, and that the respondents in the current study are young female pupils who are inevitably less familiar with such substances than university students and perhaps even less well-informed than other sections of society. For instance only 25 pupils (6.3% of the sample) were fully knowledgeable about side effects of ecstasy use. This clearly indicates the importance of educational programmes for this

young group who are evidently at risk.

Findings also indicate that the attitude of the largest percentage of female pupils (56%) towards using ecstasy is "negative". Mausavi and Tabatabaee (2006) also showed that 25.5% of men and 39.9% of women have a "positive" attitude, with 46.6% of men and 39.9% of women have an "average" attitude, and 25.9% of men and 20.3% of women have a "negative" attitude towards prevention of ecstasy use[10]. It could be argued that perhaps presenting this substance as a harmful and dangerous drug has led to a "negative" attitude towards using ecstasy among this group and the study's respondents. This is a significant finding and even though only a small percentage of participants in the current study have a "positive" attitude in this respect, nevertheless there is a need for putting wide-ranging and specific plans into action in order to prevent them from having leanings towards this drug. Bagheri and Bahrami (2003) reported that if people were aware of, and believed the undesirable effects of drug use on mental and physical health, their career prospects, and the impact upon their families, it would have been less likely for them to resort to drug taking[11].

Findings of the current study indicate that there is a positive relationship between Knowledge and Attitude of the female pupils regarding ecstasy use. Jazayeri et al quoting Rahimi-Movaghar (2003) reported that one of the preventative methods is providing knowledge regarding the dangers and harmful effects of illicit drugs bringing about a change in their attitude from "Positive" to "Negative" towards addiction, addicts and drugs[12].

Conclusion

Addiction to a range of illicit substances in the third millennium has become a major and a frightening problem with destructive impact upon all social, economical, political, cultural, mental and educational aspects of life[13]. Addiction can be the basis of many harms and predicaments in society and its widespread use by the young and the adolescents, especially in a society with a young population structure, can lead to waste, disorder and collapse of the foundations of that society. Unfortunately, despite the advances in the scientific fields, especially in medical sciences, not only drug use has not decreased but with the advent of new medicinal and non-medicinal substances, the extent of drug use and the consequent complications are on the increase. The results of the current study indicate that the Knowledge of a high percentage of the pupils in Education Area 17 of Tehran regarding ecstasy use is low.

Hence the need for further research and intervention of relevant authorities in devising appropriate programs to improve the knowledge base of the young and the adolescents is apparent. In this context, it is evident that health care professionals in association with educational authorities, headmasters and headmistresses, teachers, and health trainers need to take necessary joint action to prevent substance abuse. Their actions need to be coordinated with other relevant authorities such as the Organisation for the Campaign against Drugs, utilising national programmes and screening of pupils and their risky behaviours, enabling them to take appropriate measures. These could include consultation and educational meetings for pupils and their parents with the aim of promoting the right approach conducive to health and well being and informing them of the dangers associated with drug use. In addition there is a need for devising educational pamphlets for various age groups who are at risk, aiming to improve society's awareness as a whole. Proposals for appropriate educational programmes in the national media for parents and pupils in order to improve their understating and knowledge of different types of drug and their side effects are also required. Appropriate schemes are also needed for fostering communication between pupils and health centres and the medical teams in order to obtain apt health advice and information.

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Table 1: Frequency Distribution of Female students' Knowledge regarding Ecstasy Use

Students' Knowledge	Number of students in each group	Percentage of students in each group
Good	83	20.8%
Average	153	38.2%
Weak	164	41.0%
Total	400	100%

Table 2: Frequency Distribution of Female students' Attitude regarding Ecstasy Use

Students' Attitude	Number of students in each group	Percentage of students in each group
Negative	224	56%
Average	120	30%
Positive	56	14%
Total	400	100%

BIRTH PATTERNS OF HIGH-RISK AND LOW-RISK CHILDBEARING OF BANGLADESHI WOMEN: A MULTIVARIATE STATISTICAL ANALYSIS

ABSTRACT

High-risk pregnancy is a critical issue in safe motherhood. Childbearing in Bangladesh is characterized by early start of motherhood, quick progress till the peak age of reproduction and slow progress till the end of childbearing period. This article presents the results of logistic regression analysis of both high-risk and low-risk childbearing concerned with parity. Out of 13 variables, 11 variables are influencing the high-risk childbearing and only two variables are influencing low-risk childbearing. The significant variables which influence high-risk childbearing are: child loss experience, duration of conjugal life, education of women, place of residence, age at first birth, occupation of husband, women's working status, religion, duration of breastfeeding, education of husband, and spousal age difference. On the other hand, the variables influencing low-risk childbearing are age at first marriage and contraceptive use.

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Introduction

Fertility in Bangladesh is high even by the standards of developing countries. Recent evidence suggests that fertility has started to decline in Bangladesh (Amin and others, 1993). The total fertility rate has declined from nearly seven births per woman in 1975 to 3.4 births per woman in 1996 (BFS, 1975; BDHS, 1993-1994). A number of demographers have argued that the mechanism of this steep fertility decline was achieved primarily due to successful family planning (Amin and others, 1990; Cleland et al., 1994; Cleland, 1993; Islam et al., 1998), that succeeded in raising the contraceptive prevalence rate (CPR) from a low level of 8 percent in 1975 to as high as 53 percent in 2000 (Mitra et al., 2001). However, from 1993-1994 the level of fertility appears to be unchanged at a level of 3.3, as indicated by the last two surveys (BDHSs) in Bangladesh in 1996-1997 and 1999-2000, respectively. About half of the population of Bangladesh is females and most of them live in rural areas with low status in the family as well as in the society. Fertility in Bangladesh is high even by the standards of developing countries.

Childbearing may have a risk of a poor or tragic outcome among those who have already had many births (Haaga, 1989). High parity is associated with increased risk of maternal mortality where mothers may be less able to meet the physiological demands of repeated pregnancy (Koenig and others, 1987). In many developing countries about 50 percent of pregnancy terminations occur among the high-risk mothers (Rinehart and Kols, 1984) and the wide choice of family planning methods now available allow health programmes to offer an appropriate technique to avoid each type of high-risk pregnancy and maternal, child and infant mortality. Every pregnancy faces risk - high or low during the childbearing period. In the following section an effort is made to identify the factors that have influence on high-risk and low-risk childbearing according to parity of women. A woman's parity, i.e., fertility, is considered as a dependent variable. The aim should be to identify the variables, which have significant influence on the dependent variables. The logistic regression analysis identifies the variables, which variables influence high-risk childbearing and which variables influence low-risk childbearing.

The analysis of births in the last five years preceding the interview is of interest in this context since it can provide further insights into the mechanisms underlying fertility change (Njogu and Martin, 1991). Childbearing in the human population is a complex phenomenon. Analysis of childbearing (high-risk or low-risk) is even more complex since a number of biological, behavioral and cultural factors are associated with it. In the context of Bangladesh, only a few studies, not all of them nationally representative, have been carried out to examine the effects of various factors on childbearing performance (Islam et al., 1995; Islam, 1999). Therefore, the purpose of the present paper is to identify the factors influencing both high-risk and low-risk childbearing in the context of parity of Bangladeshi women, employing the technique of logistic regression analysis.

Materials and Methods

The study will utilize data from the 1999-2000 Bangladesh Demographic and Health Survey (BDHS) which employed a nationally representative, two-stage sample that was selected from the master sample maintained by the Bangladesh Bureau of Statistics (BBS) for the implementation of surveys before the next surveys (2001). A total of 10,268 households were selected for the sample, of which 9,854 were successfully interviewed. Among these households, 10,885 women were identified as eligible and interviews were completed for 10,544 or 97% of them. The multivariate logistic regression analysis provides a powerful statistical technique for identifying high-risk and low-risk childbearing with respect to several socio-economic and demographic variables, simultaneously. In this paper, high-risk and low-risk childbearing is concerned with births in the last five years and have been treated as "1" and "0", respectively.

In the 1999-2000 BDHS, a number of socio-economic and demographic variables are available. In the present analysis, the impact of 13 explanatory variables on parity is examined. The correlates are seven socio-economic characteristics: education of women, education of husband, working status, place of residence, contraception, religion of women and occupation of husband; and six demographic characteristics: duration of conjugal life, spousal age difference, age at first marriage, age at first birth, child loss experience, and duration of breastfeeding. Finally, we have considered here two groups viz., high-risk and low-risk childbearing with respect to parity treated as "1" and "0", respectively. Some socio-economic and demographic variables to identify the high-risk and low-risk childbearing are given below:

Births in the last five years precede the survey, i.e., fertility is considered as a dependent variable. The aim should be in the identifying of the variables, which have significant influence on the dependent variable. The explanatory variables considered in this model are as follows:

Results and Discussion

Table 1.2 shows the percentages of births in the five years preceding the interview that fall into different child survival risk categories, as well as the distribution of all currently married women across these categories. Over the last several decades demographers have identified high-risk fertility behavior by the following risk category.

The result of logistic regression analysis is shown in Table 1.3. The regression coefficients in the model shown in Table 1.3 are statistically significant at different levels. For example, the regression coefficient of X10 (child loss experience) is significant at 1% level of significance while the regression coefficient of X6 (duration of breastfeeding) is significant at 5% level of significance. The third column of Table 1.3 shows the odd ratio. For example, the odds ratio of education of women is 1.922 and indicates that the risk of childbearing will be 1.922 times higher for those mothers who have no education than those mothers who have some education. Similarly, the odds ratio of child loss experience is 16.977 which indicates that the risk of childbearing will be 16.977 times higher for those mothers who have child loss than those mothers who have no child loss.

Therefore, the most important significant variables that influence high-risk childbearing are place of residence, religion, age at first birth, education of women, duration of breastfeeding practices, duration of conjugal life, women's working status, child loss experience, and occupation of husband, education of partner, and spousal age difference. On the other hand, the variables that influence low-risk childbearing mothers are surviving children, contraceptive use, and age at first marriage. Table 1.3 suggests that the most highly significant variable is child loss experience (odds ratio 16.977) and the next significant variable is duration of conjugal life (odds ratio 6.523). The analysis further indicates that child loss experience will affect childbearing pattern. Age at first birth is also an important correlate of a high-risk childbearing pattern. The higher the infant and child mortality in a community; the lower the age at marriage.

Thus, improved child survival may help to motivate mothers to prolong birth spacing by practices of breastfeeding and contraceptive use. Education of women is also an important determinant of high-risk childbearing. Duration of breastfeeding is found to have a significant direct negative effect on fertility. Encouraging women to breastfeed their children for a relatively longer duration may also contribute to a reduction in fertility. The total effect of female education on fertility is found to be negative. Education may provide better employment opportunities outside home and providing education to females, especially at the secondary and higher levels can rise age at first marriage and age at first birth. Another important factor of high-risk childbearing is women's work status. Most women in Bangladesh work at home as housewives, for example, cooking, maintaining home, taking care of children and so on.

The logistic regression equations for both low-risk and high-risk childbearing are-

$$\lambda_0 = 0.216 - 0.393_{x1} - 0.635_{x2} - 0.215_{x3} - 0.273_{x4} + 0.084_{x5} - 0.023_{x6} + 0.223_{x7} - 0.2.034_{x8} - 0.010_{x9} - 9.911_{x10} + 0.714_{x11} + 0.313_{x12} - 0.031_{x13}$$

$$\lambda_1 = - 1.390 + 0.396_{x1} + 0.653_{x2} + 0.198_{x3} + 0.323_{x4} - 0.132_{x5} + 0.096_{x6} - 0.197_{x7} + 1.875_{x8} + 0.040_{x19} + 9.930_{x10} + 0.306_{x11} + 0.302_{x12} + 0.040_{x13}$$

Conclusion

Some findings of this study deserve consideration from the viewpoint of their policy implications. Child loss experience is found to have a most significant positive effect on fertility in Bangladesh, which means that mothers who have experienced child loss are found to have more births. Mothers always

try to replace their dead children as early as possible. Such behavior is a result of social fear about the survival of children. Maternal mortality is also high in Bangladesh. Therefore, it is essential to strengthen maternal and child health care activities in order to reduce the level of child and maternal mortality. Great attention should also be given to the delivery of family planning services to women, particularly younger ones, and to provide them with motivational messages about the health benefits of fewer children. Also lengthening the birth interval can reduce fertility in both urban and rural areas of the country. Since the fertility of urban women is much lower than that of rural women, increasing urbanization will hasten the current trend in fertility reduction. Perhaps later age at marriage will be another observable effect of increased female status, which would have a subsequent fertility-reducing effect. Therefore, the encouragement of early marriage should be stopped, especially for adolescents.

The present study is a modest attempt to categorise the variables into two ways and to analyze the high-risk and low-risk childbearing pattern in the context of prevailing socio-economic conditions. There is no doubt about the contribution of childbearing pattern in regulating population growth of the country and policy makers and planners will show a congenial and judicious path for the development of Bangladesh.

The total effect of female education on fertility is found to be negative. Education may provide better employment opportunities outside the home, and age at marriage and age at first birth can be raised by providing education to females, especially at the secondary and higher levels.

Based on the findings of this study, it may be suggested that attention should be focused on the need for providing educational facilities for Muslim women in rural areas in order to depress the level of fertility in Bangladesh.

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Table 1.1: List of Explanatory Variables of Logistic Regression Model for both High-risk and Low-risk Childbearing Patterns according to Parity

Variables	Description	Codes and Categories
X_1	Place of residence	1 = Rural 0 = Urban
X_2	Education of women	1 = No education 0 = Primary or more
X_3	Religion of women	1 = Muslim 0 = Non-Muslim
X_4	Age at first birth	1 = Below 18 years 0 = 18 + years
X_5	Contraceptive use	1= Never use 0 = Ever use
X_6	Duration of Breastfeeding	1= < 12 months 0 = 12 + months
X_7	Age at first marriage	1 = Below 15 years 0 = 15 + years
X_8	Duration of conjugal life	1 = 15 + years 0 = < 15 years
X_9	Education of Husband	1= No education 0= Primary or more
X_{10}	Child loss experience	1 = Ever loss 0 = Never loss
X_{11}	Occupation of Husband	1 = Manual 0 = Non-manual
X_{12}	Women Working status	1 = Never work 0 = Ever work
X_{13}	Spousal age difference	1 = < 6 years 0 = 6 + years

Table 1.2: High-risk Fertility Behavior

Percent distribution of children born in the five years preceding the survey by category of elevated risk of dying and risk ratio of currently married women by risk of conceiving a child with an elevated risk of dying, according to category of increased risk, Bangladesh 1999-2000		
Risk category	**Births in five years preceding the survey**	
	Percentage of births	**Risk ratio**
Not in any high-risk category	33.0	1.0
Unavoidable risk category: first birth		
Single high-risk category		
Mother's age < 18	17.4	2.29
Mother's age >34	0.5	2.35
Birth interval <24 months	5.2	1.75
Birth order >3	19.2	1.37
Multiple high-risk category		
Age <18 and birth interval<24 months	1.4	2.9
Age >34 and birth interval<24 months	-	-
Age >34 and birth order>3	4.6	1.0
Age >34 and birth interval <24 months	0.5	3.38
And birth interval <24 months and birth order >3	4.3	2.51
In any risk category	53.2	1.84

Table 1.3: Odds Ratios, Regression Coefficients and their Significance Level of Logistic Regression Models examining associations between selected characteristics and both High-risk and Low-risk Childbearing in the context of Parity

Characteristic	High-risk childbearing			Low-risk childbearing		
	Coeff.	Sig.	Odds ratio	Coeff.	Sig.	Odds ratio
Place of residence Rural Urban	0.396	0.002**	1.485 -	-0.393	0.002	0.675 -
Education of women No education Primary or more	0.653	0.000*	1.922 -	-0.635	0.000	0.530 -
Religion Muslim Non-Muslim	0.198	0.257**	1.219 -	-0.215	0.214	0.807 -
Age at first birth Below 18 years 18 + years	0.323	0.000*	1.381 -	-0.273	0.027	0.761 -
Contraceptive use Never use Ever use	-0.132	0.368*	0.876 -	0.084	0.566	1.087 -
Duration of breastfeeding < 12 months 12 + months	0.096	0.880**	1.100 -	-0.023	0.971	0.977 -
Age at first marriage Below 15 years 15 + years	-0.197	0.116*	0.821 -	0.223	0.073	1.250 -
Duration of conjugal life 15 + years Below 15 years	1.875	0.000*	6.523 -	-2.034	0.000	0.131 -
Child loss experience Ever loss Never loss	9.930	0.000**	16.977 -	-9.911	0.000	0.000 -
Occupation of husband Manual Non-manual	0.306	0.594*	1.358 -	0.714	0.001	0.619 -
Women working status Never work Ever work	0.302	0.000*	1.353 -	0.313	0.040	0.763 -
Education of husband No education Primary or more	0.040	0.740	1.041 -	-0.010	0.933	0.990 -
Spousal age difference < 6 years 6 + years	0.040	0.974	1.004 -	-0.031	0.808	0.969 -
Constant	-1.390	0.000	-	0.216	0.747	-

*p < 0.01, **p < 0.05

MOLECULAR BIOLOGY OF AGING

Manal El Ejel

ABSTRACT

I begin my review paper with a little introduction about the molecular biology of aging and then I discuss the theories and the techniques used.

Introduction

As life starts there is limits to it, it reaches an end. The same goes for elderly people who reach this point due to different factors that increase or decrease the duration of life.

After many studies molecular biology is deemed the most important assay in relation to senescence. So we study what are the causes of aging, such as life span, protein, foods, in order to manufacture geriatric medicines.

According to many authors immortality is defined such that "intestinal toxins or lactobacillus may have a role in aging process" according to Elie Metchnikoff, while Anna Aslan popularized "Gerovital h3 (a mixture of procaine, benzoic acid, and potassium met bisulfate) as a rejuvenating agent".

Aging theories are studied by division in to population, organ, and cellular based theories. A variety of molecular techniques helps in the studies of molecular biology of aging.

Molecular techniques are powerful tools which allow the probing of basic cellular functions and elucidate the mechanisms of disease states. These techniques have already been proven to be extremely useful in making diagnosis and treating some diseases. Protein synthesizing machinery is the principal of cellular function of the aging process due to its relation with transcription and translation of DNA in nucleus of eukaryotic cells[1-2].

The study of genetics of protein synthesis is divided in to quantization of proteins, mRNA, transcription. Thus the cause can be achieved more simply.

Protein: Is estimated either by measuring the protein mass (by Elissa, Electrophoresis, western Blot analysis) or by estimating its activity by measuring the rate of reaction and disappearance of cofactors.

The same goes for protein mRNA which is tested, in order to examine the activity of genes by translating its mRNA into protein. The common procedure used to analyze specific mRNA sequence is northern gel analysis[4]. There are two other methods for identifying DNA regulating protein system, by foot printing or gel retard action[5].

For transcription which becomes popular in the study of hormonal regulation of gene expression, according to nuclear "Run-on" assay or to chloramphenicol acetyl transferase (CAT) ASSAY.

RELP "Restriction Fragment Length Polymorphism"

This is used to detect mutation within a gene that will result in dna polymorphisim. Studies of the structural changes in chromatin is by two techniques: Nuclease Digestion Studies and DNA unwinding assays.

Studies of the DNA strand Breaks/ Repair by: alkaline and neutral sucrose gradient sedimentation techniques and other various techniques that study DNA damage such as Methylation status of the DNA which is associated with transcriptional activity of certain genes[3].

The study of cellular-based theories and reactions in our body with age, lead to many disturbances of the body as AGE which serve as a biomarker of aging[7]. Studies, conducted on rats, of drosophila indicate the age-related reduction in protein synthesis[8] conditions such as (nutrition, endocrine and organ system stasis) may potentially confound the interpretations of age-related changes in specific mRNA level.

A good example of altered mRNA stability with age in the increasing albumin mRNA levels is the liver aged animals[9]. These are not due to enzyme changes but due to chromatin bound neuronal RNA polymerase which decrease in aging neurons. Age-related changes in chromatin melting point increase with age.

DNA winding rate in alkali containing high concentration of urea is also reduced in aged animals.

Recent evidence for genetic basis of cellular aging:

1. RNA with inhibitory activity on cellular growth in vitro.
2. The recessive phenotype of immortality in cultured cells.
3. The expression of c-fos oncogene has been linked to stimulation of DNA synthesis by growth factors.

Conclusion

Many studies and techniques are issued in order to promote a more significant picture about age in relation to molecular genetics but, always there are elements missing.

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GENERAL THEORIES OF AGEING

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ABSTRACT

In this review paper we discuss all the theories of aging that are proposed. We begin by a little introduction then we mention each theory with little explaining about the bases of each theory and finally we make a little conclusion where we open another door of discussion.

Introduction

Everything in this life begins small and with time will be bigger and bigger so everything fits under the theory of ageing and it is true that there is no common definition to the theory of ageing, but depending on the discipline, the phenomenon of ageing takes a different definition. Biological ageing is made up of a number of undesirable processes. There are multiple processes of ageing that result in a decline in efficiency of the organism and end in its death.

Ageing, particularly in the psychosocial sciences often includes a desirable process of maturation that, is, acquiring a desirable quality such as wisdom.

The biological theory of ageing

Biological theory:

- PRIMARY AGEING (developmental genetic theory)
- SECONDARY AGEING (stochastic theories)

PRIMARY = decline in functions which are genetically controlled.

SECONDARY = random changes resulting from acquired disease and trauma.

Deliberate Biological Programming

Numerous studies demonstrated that normal cells have a memory for the number of duplications to be encoded in the genetic material. In ageing not only is the neuron lost, but also there are alterations of neuronal synapses and networks.

Genetics of Human Ageing

Females outlive males because the y chromosome does not contain sufficient genetic material. Mitochondrial genes which are inherited from the mother are important to aerobic respiration and age changes.[1]

The Ageing Clock

The hypothalamus where there is alteration in the responsible nuclei clusters of cells and in the functions of these cells, plays an important role in the losses of homeostatic mechanism in the body. Van Gool and Mirmiran propose that our biological rhythms become desynchronized as we age.

The Free Radical Theory

Free radicals (molecular fragment as it has an unpaired electron) have been linked to DNA damage, the cross - linkage of collagen, and the accumulation of age pigments.[2,3]

The Accumulation of Waste

With time there is accumulation of lipofuscin (pigment) in neurons but limited to the cells that are capable of dividing, while there is no evidence that it may be harmful to these cells.[4]

The Immune System and Ageing

A small number of immunologically competent cells produce antibodies which might result in death or damage in a large number of cells including neurons; anti-brain antibodies are believed to be related to neuronal injury in senile dementia of the Alzheimer tyoe. Interleukin-2 declines with age and it appears that the administration of IL-2 may retard the human ageing processes.[5]

Psychological Theories of Ageing

The main areas that have been studied by psychologists can be placed into three broad categories:

- COGNITIVE
- PERSONALITY
- COPING MECHANISM

COGNITIVE

It is the range of human intellectual functioning[6]. Adults with high intelligence and education will show minimum decline in their performances with increasing age, while a significant decline is observed in adults with lower intelligence and age. There are several theoretical models of memory functioning. Intellectual performance seems to be strongly influenced by physical health. Perlmutter sees decline neither inevitable nor universal and says that some cognitive skills may improve or may be acquired as one ages. However as one reaches the point of “terminal drop” which is a curvilinear decline related to the distance of death rather than old age itself, there will be a decline in intellectual functioning. Schaie’s stage theory of adult cognitive development attempts to formulate four cognitive stages in sequence:

- First stage: acquisitive in childhood and adolescence.

- Second stage: achievement in young.
- Third stage: responsible and executive in the middle-aged individual.

Ribot advanced the cognitive regression hypothesis which hypothesized that the structures first formed are the last ones to degenerate in old age. Also Ribot's law is based on the fact that older adults have an easier time learning and retrieving dated items.

PERSONALITY THEORIES

There is conflict between theories according to personality and some proposed an antistage theory of ageing where personality, development, and adjustment are affected by historical events throughout the life cycle. Others say that the elderly may find either ego integrity through satisfaction with past life or despair and adjust over past failures and many other theories have been reported according to personality.

Social Theories of Ageing

Social theories are divided into those that examine the relationship of the older person to society and those that study the role and status of the elder. Cumming and Henry claimed that the withdrawal of the elderly from their previous societal roles, with reduction in all types of interaction, was desirable and helped the elderly to maintain life satisfactions. In contrast the disengagement theory proposed that the activity contributes to health and life satisfaction. Also there are many sociological theories that have varying degrees of validity.

The Wear and Tear Theory

Dr. August Weismann believes that the body and its cells were damaged by overuse and abuse. Wear and Tear theory is not confined to our organs; however, it also takes place on the cellular level.

Abuse will only wear them out more quickly. Likewise as the body works our cells feel the effect, no matter how healthy our life style. When we are young the body's own maintenance and repair systems keep compensation, the effects of both normal and excessive wear and tear.

The Neuroendocrine Theory

This theory focuses on the neuroendocrine system, the complicated network of biochemicals that are responsible for the release of our hormones and other vital elements. Different organs release hormones, all under the governance of the hypothalamus, a walnut-sized gland located within the brain.

The hypothalamus responds to the body's hormone levels as its guide to regulating hormonal activity. Hormones are vital for repairing and regulating our bodily functions, and when ageing causes a decline in our body's ability to repair and regulate itself as well. The drop in production of any one hormone is likely to have a feedback effect on the whole mechanism.

Thus hormone replacement therapy, a frequent component of any anti-aging treatment, helps to reset the body's hormonal clock and so can reserve or delay the effect of aging.

Hayflick Limit Theory

Hayflick theorized that the aging process was controlled by a biological clock contained within each living cell. Nutriton seemed to have an effect on the rate of cell division, overfed cells made up to 50 divisions in a year, while underfed cells took up to three times as long as normal cells to make divisions. This improper functioning of cells and loss of cells in organs and tissues may be responsible for the effect of aging.

Death Hormones Theory (DECO)

Dr. Donner Denckla was convinced that the "death hormones" or deco released by the pituitary gland contributed to the loss of neurons. The resulting changes in metabolic rate bring and accelerate the process of aging.

Thymic - Stimulating Theory

Scientists investigating whether the disappearance of the thymus contributes to the aging process weakening the body's immune system. Thymic hormones may also play a role in stimulating and controlling the production of neurotransmitters and brain and endocrine system hormones, which means they may be pacemakers of aging itself, as well as key regulators responsible for immunity.

Mitochondrial Theory

Mitochondria are the energy-producing organelles in the cell that are responsible for producing energy. They produce cell energy by a process that leads to the formation of potentially damaging free radicals. Accumulated DNA damage over time is a contributing factor to disease.

Errors and Repairs Theory

Machinery for making protein in cells is so essential; an error in that machinery could be catastrophic. Therefore the accumulation of these flawed molecules can cause diseases and other age change to occur.

Redundant DNA Theory

The redundant-DNA theory blames errors accumulating in genes for age changes. But as these errors accumulate this theory also blames reserve genetic sequences of identical DNA that take over until the system is worn out.

Cross - Linkage Theory

Johan Bjorksten applied this theory to aging diseases such as sclerosis, a declining immune system and the most obvious example of cross-linking, loss of elasticity in the skin. With age however the number of cross-links increases, causing the skin to shrink and becomes less soft and pliable. It is thought that these cross-links begin to obstruct the passage of nutrients and waste between cells.

Cross-linking also appears to occur when older immune systems are incapable of cleaning the excess glucose in blood, which reacts with proteins causing cross-links and the formation of destructive free radicals.

Calories Restriction Theory

A high nutrient low-calorie diet can

dramatically retard the functional, if not the chronological aging process. Walford stresses the importance of not only the high-low diet but also moderate vitamin and mineral supplements coupled with regular exercise.

Gene Mutation Theory

Scientists investigated the role of mutations in aging, radiation not only increased animal mutation but it also accelerated their aging process as well.

The Rate of Living Theory

If energy is consumed quickly aging is hastened. Other rate-of-living theory focuses on limiting factors such as amount of oxygen inhaled or number of heartbeats spent.

Order to Disorder Theory

"Directing most of our energies to fulfilling a genetically determined plan for the orderly production and arrangement of an enormous number and variety". After sexual maturation however these same energies start to diminish in efficiency. Disorder occurs in molecules in turn causing other molecules to produce errors and so on.

The Telomerase Theory og Ageing

Telomerase are sequences of nucleic acids extending from the ends of chromosomes which act to maintain the integrity of our chromosomes. Every time cells divide telomerase are shortened, leading to cellular damage and cellular death associated with aging.

Conclusion

Many studies and techniques are issued in order to promote a more significant picture about age in relation to molecular genetics but, always there are elements missing.

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THE EFFECT OF HEALTH LITERACY ON HEALTH OUTCOMES: A RESEARCH PROPOSAL

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ABSTRACT

Due to the vast growth of knowledge in the medical and nursing fields and the increased demand on patients to comprehend communicated health information and effectively comply with treatment regimens, health literacy promotion has become the current trend in health care in the United States.

Various studies around the world were able to identify a correlation between inadequate health literacy and poor health outcomes; unfortunately, there are few or no published studies regarding the subject in the Middle East. This research proposal examines the effect of the level of health literacy on the hospitalization rate and health-promoting behaviors among the chronically ill patients who live in Kuwait.

In addition to the fact that this study corresponds to the research priorities of National Institute of Nursing Research (NINR), it has the potential to offer evidence that could improve nursing practice, enhance patient care, and reduce financial costs of care.

As the findings of the study support the relationship between the variables, it would set the stage for further, extensive literature reviews and research to validate the study and develop interventions that would combat health literacy.

Keywords: Health Literacy, Health Outcomes.

Introduction

The vast growth of knowledge in the nursing and medical fields about prevention and prognosis of diseases increase the demand on patients to adhere to certain regimens, which require high health literacy skills to cope with the complex health information. Since most patients have to deal with complex health related information at least on one occasion in their lifetime, they need to comprehend the communicated health information and be capable of evaluating and analyzing it for potential risks and benefits to arrive at an informed decision about certain treatment options. Furthermore, the current trend in health care is to promote health literacy in lay people, thus increasing their ability to make decisions about health issues; to take on healthy behaviors; to search for and use health information; and to communicate effectively with health providers. As health literacy improves in lay people, health care outcomes are expected to improve, which could translate into reduced health care cost.

Health literacy has been defined as a measure of an individuals' ability to perform basic reading and numerical tasks required to optimally function in the health care environment; it was also defined by the Department of Health and Human Services (2000, p.509) as: "The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions". The Institute of Medicine (2004) mentioned in its report, "Health Literacy a Prescription to End the Confusion" that health literacy is not only about education, a person who has finished high school and knows how to read may still not be able to navigate the health system. Health literacy comes from a convergence of education, cultural and social factors, and health services. While reading, writing, and math skills make up part of the basis of health literacy, many other skills and abilities are also important, such as speaking, listening, having adequate background information, and being able to advocate for oneself in the health system. For patients, health literacy means being able to follow instructions, manage an illness, and take medications properly. For health care professionals, it means helping patients understand and act on health care information14.

Health literacy of patients could be an essential factor in preventing further deterioration of their health and achieving positive health outcomes. In 1999 the American Medical Association estimated that 90 million people or close to half of all adults in the United States have inadequate health literacy, leading to a higher rate of hospitalization and use of emergency services.

Moreover, poor health literacy is "a stronger predictor of a person's health than age, income, employment status, education level, and race" (Report on the Council of Scientific Affairs, Ad Hoc Committee on Health Literacy for the Council on Scientific Affairs, American Medical Association, 1999, p.554). Low health literacy is positively correlated with poor health outcomes; this statement is largely accepted in the United States because numerous studies have been conducted on that subject and revealed that a strong proportional relationship exists between health literacy and health outcomes.

Since there are few or no published reports addressing the relationship between health literacy and health outcomes in Middle East, studies are needed to support the existence of a relationship between health literacy and the rate of hospitalization and health-promoting behaviors among Patients who suffer from chronic illnesses. The purpose of this study is to measure health literacy in chronically ill patients with hypertension, diabetes or heart disease who live in Kuwait, and to examine the relationship between their health literacy and the rate of hospitalization and health-promoting behaviors.

Significance

Health literacy and health outcomes correspond to the research priorities established by nursing research agencies, such as the National Institute of Nursing Research (NINR). Also there is a special interest in the study of adherence to treatment and health-promoting behaviors in chronically ill patients. Therefore, this study offers the potential to produce evidence that could improve nursing practice and patient care. Evidence of limited health literacy skills and how that affects patients' health is required to direct nursing team efforts toward identifying and improving health literacy skills and information comprehension in patients; and to enhance patients' education. These goals may be achieved through provision of easy-to-read educational materials, revising nurses' teaching methods, and communication skills.

Another aspect of significance to this study is the potential for reduction of yearly expenditure on chronic patients who are prone to recurrent lengthy hospitalization, once their health literacy is improved.

This study would also have economical significance in the Middle East due to the rising cost of health care and the current economical status of some countries in the Middle East. The findings of this study may be used to estimate the magnitude and prevalence of low health literacy in Kuwait, to develop specific interventions to identify low health literacy patients, and develop educational materials to improve health literacy and subsequently health outcomes.

Literature Review

The National Adult Literacy Survey (NALS) examined literacy in more than 26,000 adults in the United States in 19928. The survey was done in an effort to assess the population's ability to read, understand, and act on aspects encountered as a part of daily life. The findings of the survey were generalized to the United States population to estimate that 94 million people fall into the lowest two levels of five. There were no standard characteristics or a stereotype established by the survey that identifies people with low health literacy; however, most of the studies on literacy suggest that; old age, low socioeconomic status, and people having few years of education were characteristics found to be in most people with low health literacy[5].

Roper (2002) did telephone interviews with a sample of 967 participants divided into: 150 physicians, 151 pharmacists and 666 patients who were taking prescription medication at the time of the study. The author found that 83 percent of patients simply are either unaware or unwilling to admit to having difficulty with health care information. Nonetheless, the study showed that even though individuals did not report that they had a problem themselves, they believed others did "Although most patients reject the notion that they personally have experienced difficulty with health information, 79 percent of those surveyed stated that they believe that many other people have difficulty"[13].

In addition, one-third of all patients and two-thirds of physicians knew someone who had health problems because they did not understand how to take a prescription medication correctly[13]. These findings were supported by a report of the California Literacy, Inc. (2003), which stated that low health literacy is widely spread among the population; however, it is difficult to estimate the correct percentage of the health illiterate population due to a number of factors such as, people denying or hiding their illiteracy to prevent embarrassment, people not knowing they had a problem with literacy, or because of a faulty assumption by the assessor based on patients' appearances or carelessly asking patients if they understood the provided information.

Low health literacy is prevalent among chronically ill patients, since it is estimated that 75 percent of persons in the United States with chronic physical or mental health problems are in the lowest literacy category6. Kirsch et al. (2002) found in their study about "Adult Literacy in America" that inadequate literacy is especially prevalent among the elderly, the population with the largest burden of chronic disease, and consequently the greatest health-related reading demands. As the demand for learning about their health condition is high, low literacy places the elderly at risk of worsening of their health due to their inability to understand and obtain necessary information.

The previous statement is supported by Williams, Baker and Parker's (1998) study about the "Relationship of Functional Health Literacy to Patients' Knowledge of Their Chronic Disease". A cross-sectional survey was conducted on 402 hypertension patients and 114 diabetic patients from two public hospitals in the United States. Patients' health literacy was assessed while waiting in the clinic; health literacy was measured using the Test of Functional Health Literacy in Adults (TOFHLA), and knowledge of their disease was tested three days later via telephone interviews using two developed questionnaires with an adequate internal consistency, one assessing hypertension knowledge (Cronbach a = 0.70) and the other assessing diabetes knowledge (Cronbach a = 0.63).

The authors concluded that persons with inadequate literacy who suffer from chronic diseases (i.e., hypertension and diabetes) are less likely to know the basic elements on how to care for their medical problems (e.g., diet modification, warning symptoms, and normal ranges of basic tests), even if they have gone to special classes to learn how to manage their condition[17].

To elaborate, patients' functional health literacy strongly correlated with knowledge of their disease (at P < .001), and patients with inadequate literacy were less likely to answer knowledge question correctly than literate patients (e.g., 60 percent of patients with poor literacy lack knowledge that exercise lowers blood pressure). Even though 73 percent of the diabetic patients attended diabetes education classes, 45% of them had inadequate knowledge about diabetes[17].

This study points out that the problem is not just the lack of information, but also the inability to retain this information; this broadens the scope of the problem by suggesting that limited literacy might be related to poor compliance with recommended treatments. In a prospective study done by Baker et al. (2002), 3260 new Medicare managed care enrollees in four U.S. cities were selected to examine their health literacy level and related risk for hospitalization. The participants' level of health literacy was assessed using TOFHLA.

They were also surveyed on several factors affecting health status and health practices, in addition to collecting demographic data, years of education and income. Hospital admissions were followed up for two years and determined based on claims from the managed care organization. In all statistical analysis a two-sided P <.05 was used to determine statistical significance. The authors suggested that inadequate health literacy could directly affect patients' health and the risk of hospital admission. "The number of chronic conditions was linearly related to the risk of admission and showed a stronger relation to admissions than did the Charlson Comorbidity Index"[2].

Patients with inadequate and marginal literacy (19.9% and 17.8%) had more than twice the risk of hospitalization than patients with adequate literacy (14.0%); they also tended to remain hospitalized nearly two days longer than those with higher literacy skills (P< .001)[2]. Baker et al. (2002) also found that patients with inadequate functional health literacy are more likely to be unable to read, or to misread directions on prescription labels.

This can lead patients to mix medications or take either too much or too little of their prescribed medications. If patients lack knowledge of their medications or self-care techniques, they may be vulnerable to health problems or even have worsening health that would result in hospital admission.

Almost all of the studies, testing health literacy and health outcomes, found a relationship between low health literacy and deterioration in health status. Although causal relationships between limited health literacy and health outcomes are not yet established, cumulative and consistent findings suggest such a causal connection[9]. This means that health literacy may affect: patients' health, the ability of the health care system to provide effective high-quality health care and teaching, and costs of health care. Several experts have projected the costs of health illiteracy to be as high as 73 billion American dollars annually[11]. Studies have shown that people with low health literacy understand health information less well, get less preventive health care, such as screenings for cancer, and use expensive health services such as emergency department care more frequently[9]. Furthermore, other recent studies have shown that people with low health literacy are less able to comply with prescribed treatments and self-care routines. They fail to seek preventive care, and they are at higher risk for hospitalization.

As a result, the annual health care costs are four times higher than for those with higher health literacy skills3. In summary, the literature suggests that chronically ill patients are at risk for low health literacy, especially the elderly and those with low education and socioeconomic status. This low literacy was found to be associated with use of health services and ineffective health-promoting behaviors.

Research Question

Is there a relationship between health literacy in chronically ill patients with hypertension, diabetes or heart disease in Kuwait, and their risk for hospitalization and health-promoting behaviors?

Objectives

To determine the level of health literacy among persons with chronic illnesses in Kuwait.

To assess health-promoting behaviors and risk for hospitalization in Kuwaiti chronically ill patients.

To examine the existence and strength of a relationship between low health literacy and rates of hospitalization and health-promoting behaviors.

Theoretical Framework

The Chronic Care Model (CCM) developed by Wagner (1998) is the framework guiding the hypothesized relationship of the variables in this study. The model aims to improve health care systems at community, organization, practice and patient levels. The chronic care model was developed to correct deficiencies in managing chronic illnesses in the health care system through transformation of the health care system from reactive to proactive and focused on keeping a person as healthy as possible 15. One of the identified deficiencies in the management of chronic disease is that patients are inadequately trained and educated to manage their illness. The CCM emphasizes that chronically ill patients make decisions and engage in behaviors that affect their health, and that self-management support means acknowledging the patient's central role in achieving better outcomes15. Self-management support includes provision of health information, emotional support, and strategies for living with chronic illness. This study utilizes the chronic care model concept of empowering and preparing patients to manage their condition effectively in order to improve outcomes, as a mean to clarify the relationship between health knowledge and health outcomes, as evidenced by reduced risk for hospitalization and effective health-promoting behaviors.

Definition of variables

Health literacy is defined as the ability to perform basic reading and numerical tasks required to have the capacity to access, obtain, process, and understand basic health

information and services needed to optimally function in a healthy manner and make appropriate health decisions.

Risk for hospitalization is defined as the number of times and duration of hospital admissions as a result for deterioration in health due to participants' chronic illness/es.

Health-promoting behaviors are defined as the behaviors and activities of participants that promote or maintain health.

Research Design and Methods

Design

A non-experimental design was selected because the independent variable under study, health literacy, cannot be manipulated. This study utilizes a descriptive prospective (cohort) design that uses quantitative methodology to examine correlation between health literacy and risk for hospitalization and health-promoting behaviors. This type of design was selected because of the nature of the variables under study and the purpose of the study, which is to examine over time the potential effect of the independent variable on the dependant variables as it occurs naturally without intervention or manipulation. One advantage of this type of design is that it eliminates uncertainty about temporality between the studied variables.

Sample

The sample will include 300 participants from medical-surgical units reunited from two hospitals, one private hospital and one public hospital. Power Analysis estimates that to detect an effect size of 0.30 with power equal to 0.80 the sample size has to be 174 participants at a = 0.05. Although Power Analysis suggests a 174 sample size; however, a subgroup analysis for chronic illnesses (Hypertension, Diabetes and Heart disease) is going to be conducted and attrition and of participants is expected; therefore, a bigger sample size is recommended.

Patients' records in both hospitals will be used to draw the sample using a randomized systematic sampling approach; every Kth record-calculated according to the total number of eligible records- will be selected from a computerized list of records that has no order of any sort. The inclusion criteria for participants are a confirmed chronic illness diagnosis (hypertension, diabetes or heart disease), 50 years of age and older, living in Kuwait, and men and women who can read and write. Patients would be excluded if they were hospitalized at the time of the first and second interview, have a mental illness, cognitive impairment, or if they are blind or hearing-impaired. Patients who refuse to participate in the study or do not meet the inclusion criteria will be replaced by other patients using the same sampling technique until a sample of 300 participants is reached.

Procedure

After locating eligible patients, they will be approached via telephone to set up an appointment for interviews at their home. Trained personnel will explain to patients the significance of the study and the value of their participation for the study to succeed. Patients who agree to participate will receive a consent form confirming their agreement to participate and permission to examine files and records to determine date, duration and reason for hospital admission; trained personnel will also guarantee patients' anonymity and confidentiality of their information. During the interview, demographical data, educational level, and income data will be collected and followed by an assessment of the level of health literacy using an Arabic modified version of TOFHLA. Another interview will be scheduled to assess participants' health-promoting behaviors using a translated into Arabic version of Health-Promoting Lifestyle Profile II (HPLP II).

The second interview will be scheduled three days after the first one, so that participants will not lose interest or enthusiasm to be part of the study. At this point, the participants' part in the study has ended. The second outcome variable will be assessed by monitoring hospitalization of participants that are a result of deterioration of health due to their chronic illness/es for a period of two years, starting from the date of the first interview. Data concerning cause of admission, date of admission and duration of admission will be collected bi-annually by accessing participants' files and records from both hospitals. Participants will also be contacted to verify if they were admitted to other hospitals during the period of the study.

Instrument

The research data will be collected using participants' hospital files and questionnaires to measure health literacy and health-promoting behaviors. In addition, a patient information form will be used to collect demographical data, educational level, and income data. Participants will be contacted and their files and records will also be checked for a period of two years for data concerning admission; the data include admitting diagnosis, date and duration of admission.

Health literacy level will be determined using translated into Arabic and modified Test of Functional Health Literacy in Adults, TOFHLA. TOFHLA was developed by Parker and others in 1995. This health literacy tool measures the ability of patients to perform such tasks as reading labels on prescription bottles, instructions about how often to take medication, notices about when is the next doctor's appointment, informed consent forms, instructions about diagnostic tests, and how to complete insurance forms. It includes two sections: one section is on reading comprehension and the other is on numeracy and it takes about 22 minutes to administer[12].

Nurss, J., Parker, R., Williams, M., & Baker, D. (2001) calculated the internal consistency of TOFHLA and Cronbach's Alpha of TOFHLA was 0.98 and the content validity for the test was ensured by using actual hospital medical texts for both the reading comprehension and numeracy subtests. Since some of the items in the instrument are not applicable to the Kuwaiti population, these items will be modified and the instrument will be piloted to examine its validity and reliability. The instrument is not in the public domain, it is available for purchase from Peppercorn Books & Press, Inc.

Health-promoting behaviors will be measured using an Arabic language version of Walker's Health-Promoting Lifestyle Profile II (1995). It consists of six subscales addressing; health responsibility, physical activity, nutrition, spiritual growth, interpersonal growth, and stress management. HPLP II is a 52 items summated rating scale that employs 4-point response format ranging from 1= Never to 4= Routinely. Content validity was established by examining the literature and content experts' evaluation16. Construct validity was supported by factor analysis that identified a six-dimensional structure of health-promoting lifestyle, by convergence with the Personal Lifestyle Questionnaire (r = 0.678)16. Internal consistency for subscale alpha coefficients ranged from 0.793 to 0.861 and overall 0.94316. The author's written consent to permit use of this scale will be obtained from S.N. Walker, University of Nebraska Medical Center.

Protection of Human Rights

The research will be conducted by qualified nurses and trained data collectors to ensure protection of participants' rights. Autonomy and right to self-determination will be maintained throughout the study, by informing participants that they are free to voluntarily participate or withdraw at any time. Confidentiality and anonymity of participants will be preserved by keeping measures to safe-guard their identities and information. Data will be collected from participants information form, two questionnaires and the participants' files. As a measure to maintain comfort and reduce anxiety, questionnaires will be administered on two short and separate meetings in the homes of the participants. Collected data from the questionnaires and records will be securely locked in cabinets with limited access. The names of participants will be coded so that identities remain anonymous. All of the collected data are strictly used for the benefit of this study, and will be destroyed as soon as the study is over. The study carries no apparent risks to participants since it is a correlation study and no interventions or treatments are involved in the design of the study; however, the Institutional Review Board (IRB) will evaluate the ethical aspect of the study's design and methodology to ensure protection of participants' rights.

Data Analysis

Health literacy is the independent variable; it will be divided into three categories; adequate, marginal and inadequate. In order to determine level of health literacy, participants will be assigned to one of the three categories if their score on TOFHLA was: 0-55, 56-76 and 77-100, respectively. The data will be described using percentages for each level; first for participants of both hospitals combined, and then separate percentages for participants from each hospital (objective #1). The first outcome variable is risk for hospitalization: collected data will be the number of times each participant is hospitalized and the length of stay for each hospitalization, measured in number of days. The describing statistics used to assess the first outcome will be the mean and standard deviation (objective #2). Furthermore, comparisons between the groups' length of stay will be described by calculating the percentages for each group. The second outcome is health-promoting behavior, and the describing statistics will be the mean and standard deviation. On each subscale and on the overall scale, participants will be assigned to one of four groups: ineffective, sometimes effective, often effective and effective, if they had a mean score of 0- 1, 1.1- 2, 2.1- 3 and 3.1- 4, respectively (objective #2). The stratifying variables; gender, education level and income will be grouped. Gender will be either male or female. Education level will have four groups ranging from elementary education or lower to college education and higher. Income will also have four groups. The first group contains participants with yearly income of $10,000 and lower, and the fourth group contains participants with higher than $50,000 yearly income. Finally, age will be described using the mean and standard deviation.

The means of number of hospitalizations, the length of stay and the means of health-promoting behaviors instrument for the three health literacy levels of participants, will be tested separately for differences using ANOVA. A multifactor ANOVA will also be used to test the relationship between the stratifying factors and the outcome variables. The correlation between health literacy and the outcome variables will be tested using Pearson r coefficient, to examine the existence and strength of the relationship (research question). A correlation matrix will summarize correlations among the three levels of health literacy, and participants' characteristics (age, gender, education level, and income) as predictors of the two outcomes (number of hospitalizations and scores of health-promoting behaviors instruments), another correlation matrix will be used to identify which chronic condition (Hypertension, Diabetes and Heart disease) has the highest risk for low health literacy and which one is the strongest predictor of the dependant variables. The chi-square test will be used to illustrate the proportion of participants, with specified health literacy level, that fall into a yes or no for hospitalization groups.

In all tests, the significance level (Alpha a) is set at 0.05, and the Confidence Interval will be set at 95%.

Conclusion and Limitations

If the results of this study fail to support the research hypothesis, a revision of the study's methods and procedures is recommended, and to widen the study's investigation of other variables that may have confounded the results.

The expected limitations of the study may be the effect of attrition of selected participants on the sample to be representative of the population. Since hospitalization or ineffective health-promoting behaviors could be a result of many causes; therefore, the findings are subject to many confounding variables that were not included or in the study; however, the most important variables that would account for other variables were included in the study. For example, income was included in the study and it would account for other variables such as; access to health

care and medications, clean and safe households.

As the findings of this study support that health literacy is related to the rate of hospitalization and health-promoting behaviors in chronically ill patients, an effort is required to conduct literature reviews and further research to determine effective methods to combat low health literacy such as; comprehendible and specially-designed materials, that improves processing and retention of information. Utilization of these study findings in nursing practice is necessary to revise and modify nursing assessment of learning needs of patients, nurses' communication skills and health care information delivery. Additionally, nursing administrations are needed to adopt and sponsor researches targeting solutions and interventions to either identify or promote health literacy in patients.

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Hospitalization	Health literacy Levels			Total
	Adequate	Marginal	Inadequate	
YES				
NO				
TOTAL				

$\chi 2$ =
P value =

ABSTRACT

Due to the vast growth of knowledge in the medical and nursing fields and the increased demand on patients to comprehend communicated health information and effectively comply with treatment regimens, health literacy promotion has become the current trend in health care in the United States.

Various studies around the world were able to identify a correlation between inadequate health literacy and poor health outcomes; unfortunately, there are few or no published studies regarding the subject in the Middle East. This research proposal examines the effect of the level of health literacy on the hospitalization rate and health-promoting behaviors among the chronically ill patients who live in Kuwait.

In addition to the fact that this study corresponds to the research priorities of National Institute of Nursing Research (NINR), it has the potential to offer evidence that could improve nursing practice, enhance patient care, and reduce financial costs of care.

As the findings of the study support the relationship between the variables, it would set the stage for further, extensive literature reviews and research to validate the study and develop interventions that would combat health literacy.

Keywords: Health Literacy, Health Outcomes.

TOPICAL USE OF HUMAN BREAST MILK FOR DIAPER RASH IN INFANTS

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Introduction

Diaper rash can be defined as contact dermatitis. Diaper rash is the most common irritant contact dermatitis occurring in approximately one third of young children, usually in a mild form. The most common prevalent age in infants is from 4-12 months of age[1].The incidence is greater in bottle-fed infants than breast-fed ones[2].

The skin of the diaper area may become erythematous and scaly, often with papulovesicular or bullous lesions, fissures, and erosions. The eruption can be patchy or confluent, but the genitocrural folds are often unaffected. Chronic hypertrophic flat-topped papules and infiltrative nodules may mimic syphilitic lesions. Secondary infection with bacteria and yeast is common; and discomfort may be severe because of intense inflammation[3].

There are three factors responsible for producing diaper dermatitis - wetness, pH, and fecal irritants. The underlying skin condition of the infant and the degree of wetness of the skin corresponds with the degree of diaper dermatitis. Skin that is moist becomes more heavily colonized with microorganisms than dry skin[4].

Human breast milk (HBM) is considered as the ideal food for newborn infants. It is a live nutrient, comparable with blood, with no similar substitute. Advances have occurred in the scientific knowledge of the benefits of breast milk in recent years. Some studies have documented anti- inflammatory effects of human milk in animal subjects. Colostrum contains a variety of immunologic materials against the bacteria, viruses and fungi which are present in the environment of mothers and their newborn babies[5]. Immunologic and anti-infective factors include: lactoferine, lymphocytes, special prostaglandins, bifidous factor, bioactive components and growth factors[6]. Epidermal growth factor (EGF) is a major growth promoting agent in breast milk, and stimulates proliferation of intestinal mucosa and epithelium also strengthening the mucosal barrier against the antigens[7]. EGF is usually applied topically, although it can also be used intravenously. When EGF is applied to injured skin, such as burns, ulcers (skin or GI tract), and surgical corneal wounds, it does promote healing[7,8].

Several topical agents have been used for treating the condition of diaper rash. In this study we have compared the effects of topical human breast milk (HBM) with zinc oxide ointment for treating diaper rash in infants.

Methods

This interventional study was carried out to assess the effects of topical use of HBM on diaper rash.

It was done in Besat hospital in Sannandaj, Iran between February and July 2004. The study sample consisted of 50 infants under two years of age. These infants were hospitalized due to prematurity, sepsis, gastroenteritis and pneumonia and developed diaper rash. They were randomly allocated by block randomization method to either intervention or control groups (25 in each group).

Block randomization is a method that assigns subjects to treatment (intervention) groups in blocks of four. Each of the assignment blocks is balanced (equal number of intervention and control assignments) and blocks are selected by a random method.

None of them received steroid and immunosuppressive drugs. Infants were treated with either zinc oxide or HBM. The mothers of the infants in the intervention group were instructed to apply HBM on the lesion for treatment of diaper rash. The infants in the control group were treated with topical zinc oxide ointment (Sobhan pharmaceutical company, Iran). After cleaning the affected areas with water, HBM or zinc oxide was applied at each diaper change. Infants were assessed at baseline and twice a day on days 1, 2 and 3 of treatment (6 times).

In each assessment the efficacy variables included the affected area surface that considered by the lesion diameters (measured by using a sterilized ruler put along the lesions), in a way that, ³ 3´2 centimeter (cm^2) = large size, 2´2cm^2 = moderate, and <1´2cm^2 = small. We specified two conditions for severity of erythema, namely, mild or moderate redness with maculopapular lesion = presence of inflammation and fissures and intense erythema = presence of wound.

Data were analyzed using windows version 9.0 of the Statistical Package for Social Sciences (SPSS). A P value of <0.05 was considered to be statistically significant and the Chi-square test was used for comparing the differences between the two groups.

Results

We compared the effects of topical application of HBM with zinc oxide ointment in treatment of diaper rash. Table 1 shows that 48% of the HBM group infants and 44% of the zinc oxide group had large size lesions on the first day (in the morning, between 8 - 9 o'clock). By the third day (in the evening, between 6-7 o'clock), these changes had fallen to 4% and 16% respectively.

Analysis of the data from Table 2 shows that 64% of the intervention group infants and 68% of the control group on the first morning (between 8-9 o'clock) had inflammation. These percentages by the third day (evening, 6-7 o'clock) decreased to 24% and 32% respectively.

With regard to the perineal intense erythema (wound), Table 3 indicates that 48% of HBM group and 36% of zinc oxide group on the first day morning had intense erythema that declined to 12% and 20% respectively by the third day¢s evening. The size of affected area and severity of erythema were reduced in both groups. Chi square test showed no significant difference between the two groups in terms of area size, inflammation and erythema severity.

Nevertheless the Chi square test in Tables 4 and 5 indicated that there were significant differences between the two stages of treatment (before and after P= 0.004) in the HBM group. More precisely, the large size of the rash in 12 cases did not disappear completely, reduced to one case after applying HBM on to the perineal area (p=0.0004). Also findings in relation to inflammation demonstrated that after treatment with HBM, 19 infants did not have inflammation and only 6 of them had a problem. With respect to erythema severity (wound) results indicated that 22 infants did not have a rash after treatment by HBM in their perineal area and there was a significant difference between before and after treatment by HBM (p=0.005).

In the zinc oxide (control) group we observed the same reduction in the lesion size, namely, the large size of the rash (as mentioned before lesion diameters measured by a ruler) was observed in 11 infants that decreased to 4 and Chi square test showed there was a significant difference between before and after treatment by zinc oxide in the lesion size (p=0.032), and inflammation was noticed in 17 infants that declined to 8 (p=0.011). Although there was no difference after treatment by zinc oxide about intense erythema between two stages, only 5 infants had intense erythema.

Conclusion

All of the infants who participated in this study were breast-fed infants and they had diaper rash with a variety of degrees from rash to erythema. The findings showed that the width of lesions in the morning of the first day in the two groups were much the same, but after treatment and reassessment, the results indicated that the improvement in the HBM group was bigger than the zinc oxide group. Similar findings were reached by Kalliomaki et al (1999), who expressed the idea, that beta growth factor in human breast milk decreased atopic dermatitis in infants[9]. Kull et al (2002) followed 4,089 Swedish infants up to 2 years and also found protective effects of breast feeding on the incidence of asthma and atopic dermatitis[10].

Ahmadpour et al (2006) found that human breast milk could be substituted for other topical agents for umbilical cord care. Because the umbilical cord dries and becomes mummified and polymorphonuclear leukocytes infiltrate the area between the drying cord stump and the vital tissues of the abdominal wall, forming demarcation zone. Breast milk may enhance the umbilical cord separation through polymorphonuclear leukocytes, proteolytic enzymes, or other immunologic agents[11].

This study found that the absence of inflammation in the evening of the third day of treatment in the two groups not significantly different. This finding was approved by studies of Giancarlo Pizza et al (1999), who found that the use of beta growth factor in HBM can reduce

the inflammation in Dermatitis, Hepatitis, Herpes Zoster and conjunctivitis[12]. Brzozowski et al (2001) reached a similar conclusion regarding the local protective effect against gastric ulcer[13] and Pishva et al (1998), indicated that topical application of HBM can be protective in the prevention of neonatal conjunctivitis[14].

This study showed that the improvement of perineal nappy rash in the intervention group was greater than in the control group. Larijani et al (2003) and Grazul et al (2003) concluded that application of local EGF had a significant role on diabetic wound healing[15,16]) and numerous studies suggest that human epidermal growth factor has specific effects on corneal epithelial wound healing[17-20]. Therefore, it is recommended that topical breast milk is considered for treatment of diaper rash.

The results show that there were no significant differences between the two groups with respect to lesion size, inflammation and intense erythema. However the data revealed that there were significant differences between the two stages (before and after) of treatment of diaper rash by HBM and zinc oxide. This finding suggests that the HBM is a suitable, convenient and complication free choice for diaper rash treatment.

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Table 1:The effects of breast milk and zinc oxide on lesion size

Time of observation	group size	small		moderate		large		Total		Test result
		No	%	No	%	No	%	No	%	
The 1st day morning	Breast milk	3	12	10	40	12	18	25	100	
	Zinc oxide	5	20	9	36	11	44	25	100	
The 3rd day evening	Breast milk	14	56	10	40	1	4	25	100	
	Zinc oxide	6	24	15	60	4	16	25	100	

Table 2: The effects of breast milk and zinc oxide on inflammation

Time of observation	Inflammation group	Absence		Presence		Total		Test result
		No	%	No	%	No	%	
The 1st day morning	Breast milk	9	36	16	64	25	100	
	Zinc oxide	8	32	17	68	25	100	
The 3rd day evening	Breast milk	19	76	6	24	25	100	
	Zinc oxide	17	68	8	32	25	100	

Table 3: The effects of breast milk and zinc oxide on Erythema (wound)

Time of observation	wound group	Absence		Presence		Total		Test result
		No	%	No	%	No	%	
The 1st day morning	Breast milk	13	52	12	48	25	100	
	Zinc oxide	16	64	9	36	25	100	
The 3rd day evening	Breast milk	22	88	3	12	25	100	
	Zinc oxide	20	80	5	20	25	100	

Table4: Comparison of before and after breast milk effect on diaper rash eruptions

Kind of lesion / Time of observation	Lesion size								Inflammation						Wound					
	Small		moder-ate		large		total		ab-scence		pre-cence		total		ab-scence		pre-cence		total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
The 1st day morning (before)	3	12	10	40	12	48	25	100	9	36	16	64	25	100	13	52	12	48	25	100
The 3rd day evening (after)	14	56	10	40	1	4	25	100	19	76	6	24	25	100	22	88	3	12	25	100
Chi square P value	12.33 0.0004								7.95 0.004						7.56 0.005					

Table5: Comparison of before and after zinc oxide effect on diaper rash eruptions

Kind of lesion / Time of observation	Lesion size								Inflammation						Wound					
	Small		moderate		large		total		abscence		precence		total		abscence		precence		total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
The 1st day morning (before)	5	20	9	36	11	44	25	100	8	32	17	68	25	100	16	64	9	34	25	100
The 3rd dag evening (after)	6	24	15	60	4	16	25	100	17	68	8	32	25	100	20	80	5	20	25	100
Chi-square Pvalue	4.57 0.032								6.35 0.011						1.56 0.21					