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From the Editor

Abdulrazak Abyad
(Chief Editor)

This is the second issue this year with papers from all over the World.

A Cross sectional study from Saudi Arabia looked at the present level of knowledge, attitude and practices among university hospital physicians, nurses and patients about the use of alcohol swabbing before an injection.

A total of 163 anonymously completed questionnaires were returned to the investigator. The authors found that Knowledge about the use of alcohol swab before injection was poor, attitude to change the current practice was negative and the practice of skin preparation before injection was common.

A prospective study from Turkey looked at Coronary Risk Reduction in Patients attending primary health care. All the adult patients attending the clinic during December 2001- December 2004 were included in the study . The risks for coronary heart disease were assessed for the next ten years by evaluating socio demographic and cardiovascular risk factors using the 9-step Framingham's Coronary Disease Risk Prediction Score Sheet for Men and Women Based on Total Cholesterol Level. From 355 adult patients, 342 could be followed up. 27 had Type 2 diabetes mellitus, 132 had hypertension and 244 had dyslipidemia; 240 patients' body mass indexes were ?25 kg/m2; 81 patients were smokers. After interventions, successful results were achieved especially in women and in high risk group. Family physicians have a great responsibility and can take an active role in primary and secondary prevention and management of coronary heart diseases.

A cross-sectional study from Qatar looked at the Prevalence and determinants of depression among primary health care attendees in Qatar 2008. The sample size was 322 patients attending four primary health care centers. There was no significant relationship between depression and chronic diseases. There was a significant relationship between depressive illness and marital problems, as well as work conflict, smoking, and alcohol drinking. The authors concluded that depressive disorders are a highly prevalent condition among attendees of primary health care centers in Qatar. It is recommended that primary health care physicians should be adequately trained to recognize and manage this disorder to reduce the cost and complications of undiagnosed depression.

A paper from Nigeria looked at determining the awareness of youth about sickle cell disease in a Nigerian community. One hundred and sixteen out of the two hundred and fifty youth corpers in the community were selected by simple random sampling. Most respondents: 113 (97.4%) were aware of sickle cell disease. The authors concluded that most of the respondents were aware of sickle cell disease and their haemoglobin genotype. Health workers should create more awareness about diseases, especially those with a genetic basis.

Dr Almoutaz A A, looked at Hypoglycemia unawareness. He stressed that hypoglycemia is one of the limiting factors for tight glycemic control. Recurrent hypoglycemia may lead to development of a condition known as hypoglycemic unawareness. With this condition, the patient cannot feel the warning symptoms of hypoglycemia and may collapse suddenly. In the paper he attempted to answer the following: Why hypoglycemia is common? Why symptoms of hypoglycemia are no longer perceived after recurrent attacks? And what leads to a severe hypoglycemic episode?

A paper from India looked at Low Immunization among Children in Slums in Mumbai. The study is based on the primary data, collected using cluster sampling of sample size of 433 reproductive women who have given at least one live birth prior to the survey.

Even Logistic regression reveals that the children from low SLI category and of illiterate women were not availing child care services. The authors suggest that the measles vaccination programme has to stress not only on its coverage but also its timing to including awareness about immunization programme especially among the illiterate women.

A Cross sectional study was conducted at a teaching hospital primary care clinic attempting to evaluate prescribing patterns and laboratory requests for patients attending a primary care clinic, in a teaching hospital in Riyadh, Saudi Arabia. The total number of patients included in the study was 243. The study showed that 75.7% of consultations ended with prescription of drugs to the patients, and 88% of the consultations ended with laboratory requests; only 9.9% of consultations ended with radiology request. And only 2.5% of consultations ended with an ECG order. The authors concluded that the prescription patterns of drugs and requesting laboratory investigations at Primary Care level is high, which needs to be reviewed and audited to improve the quality of care and to decrease the cost and burden on the patient and health system facilities.

Prevalence and determinants of depression among primary health care attendees in Qatar 2008

ABSTRACT

Objectives: This study aims at estimating the prevalence of depressive disorders and to identify the associated determinants in primary health care settings in Qatar.

Methodology: A cross-sectional study was conducted and 322 patients attending four primary health care centers were selected by using a systematic random technique, by taking every tenth patient according to their order of attendance at the reception desk. A Patient Health Questionnaire 9 (PHQ-9) has been administered as a screening tool for depressive disorders.

Results: Of the 306 respondents, 42.8% were males, 33.3% were Qatari, and 93% of the respondents were of age group 18-54 years. Half of the participants had university degree and 71% were employees. The prevalence rate of significant depression among the sample size was 27.8 % (a total of 85 individuals out of 306) had clinically significant depressive symptoms (PHQ-9 score of 10 or higher), while 24.8% had only minimal depressive symptoms. The highest percentage was among the young age group 18-34 years (34.2%); unmarried individuals were more prone to depression 53.0%.

There was no significant relationship between depression and chronic diseases.

There was a significant relationship between depressive illness and marital problems, as well as work conflict, smoking, and alcohol drinking.

Conclusion: Depressive disorders are a highly prevalent condition among attendees of primary health care centers in Qatar, with different socio-demographic factors affecting the prevalence of depressive

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disorders. It is recommended that primary health care physicians should be adequately trained to recognize and manage this disorder to reduce the cost and complications of undiagnosed depression.

Key words: prevalence, determinants, depression, primary health care

Introduction

Depression is a major public global health problem and a leading predictor of functional disability and mortality.(1) It is ranked fourth among the ten leading causes of the total worldwide disease burden, measured in Disability Adjusted Life Years (DALY). The WHO predicted that by the year 2020 depression would be the second most important cause of disability after ischemic heart disease worldwide, accounting for 5.7% of the total DALY, compared to 2.6% for HIV. Furthermore, depression is expected to become the number one cause of disease burden among females in developing countries. In addition to being a major factor in disability, depression increases the risk of suicide and mortality.(1-3) It is estimated that 60% of all suicides are attributable to depression. (3-4)

According to the U.S. Preventive Services estimate Task Force (USPSTF), the prevalence of major depression in the primary care setting, ranges from 5 to 9% among adults, and up to 50% of depressed patients are not recognized. Other disabling depressive illnesses include dysthymia (a chronic low-grade depression) and minor depression (an episodic, less severe illness). These two illnesses are as common as major depression in primary care settings. (5)

While guidelines encourage PHC physicians to diagnose and treat their depressed patients, rates of detection and treatment in PHC are still sub-optimal.(1) A review of published studies suggests that PHC physicians fail to detect depression, which remains undiagnosed in one third to one half of cases.(6)

Recognizing depression in patients in the primary care setting may be particularly challenging because patients, especially men, rarely spontaneously describe emotional difficulties. On the contrary, patients with depression who present to a primary care physician often describe somatic symptoms such as fatigue, sleep problems, pain, loss of interest in sexual activity, or multiple, persistent vague symptoms.(6)

PHQ-9 symptoms recommendations	PHQ-9 score	Provisional diagnosis
1 to 4 symptoms, functional impairment	<10	Mild or minimal depressive symptoms
2 to 4 symptoms, positive answer on Question a or b, functional impairment	10-14	Moderate depressive symptoms (minor depression)
5 or more symptoms, positive answer on Question a or b, functional impairment	15-19	Moderately severe major depression
5 or more symptoms, positive answer on Question a or b, functional impairment	>20	Severe major depression

Table (1):-Diagnostic categories for depression according to the nine-item patient health questionnaire (PHQ-9) and treatment recommendations

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Brief, self-administered questionnaires have been recommended to be used in depression case-finding and follow-up in the primary care setting. The Patient Health Questionnaire (PHQ-9) has become one of the most frequently used self-reporting depression scales, because of its diagnostic validity, brevity, and ease of scoring, of the 9-item depression module form. (7) The Arabic version of PHQ has been validated and tested in primary care settings in Arab countries.(8)

As we do not know the prevalence of depression based on population based survey, this study was designed to estimate the prevalence of depression among people who attend primary health centers in Qatar, to evaluate the severity of depressive symptoms and to identify determinants of depression.

Methods

This cross-sectional study was approved by medical research committee at Hamad Medical Corporation. It was conducted during the period of August-September 2008 in four randomly selected primary health care centers, - two rural and two urban health centers. A total of 320 adult subjects were selected by using systematic random techniques by taking every tenth patient according to their order of attendance at the reception desk. Verbal consent was obtained from each participant who completed the questionnaire, supervised by an experienced nurse to assist the patients.

Both Arabic and English versions of the Questionnaire were used to collect socio-demographic data, which included questions about the socio-demographic characters such as age, gender, nationality, marital status, number of children if any, housing, income, occupation, education level, period of stay in Qatar, chronic diseases such as diabetes, hypertension, coronary artery

diseases, others.

For screening for depressive symptoms, the Patient Health Questionnaire (PHQ-9) which is a validated screening tool to diagnose depression was used. It consists of nine questions based on the nine DSM-IV criteria for diagnosis of depression (Depressive syndromes are defined in DSM-IV, manifest with at least five of the following nine symptoms: depressed mood, change in psychomotor activity, loss of interest/pleasure, loss of energy, change in sleep, trouble concentrating, change in appetite or weight, thoughts of worthlessness or guilt, thoughts about death or suicide). Each of the questions asks patients to select the frequency of the depressive symptoms that they experienced in the two weeks before the survey's administration. Scores for each item range from 0 which means no symptoms at all to 3 (depressive symptoms nearly every day).

The final score was calculated, with scores between 10 and 14 indicative of a moderate level of depressive symptoms, scores between 15 and 19 indicate moderately severe major depression, and scores 20 and above indicate severe major depression. Scores were calculated according to Table 1.

Moderate depressive symptoms, moderately severe major depression and sever major depression were considered to be significant depression.

Analysis was carried out addressing the PHQ-9 outcome measures. All the information gathered was received before data entry by manual revision of the data. A Master sheet was prepared from the collected data.

Data was coded and entered into the statistical package of social sciences (SPSS) - 12 which was used for the analysis of the results. Frequency

measures and bivariate statistical analysis such as chi square test, and Fischer exact test were performed. Level of significance selected for this study was (0.05), a confidence level of 95%.

RESULTS

Out of 320 patients selected, 306 have responded to questionnaires making the response rate of 95.6%. Table 2 shows that 175 (57.2%) were females, 102 (33.4%) participants were Qatari. In terms of age group, 152 (49.7%) participants were 18 years - 34 years, and 134 (43.8 %) were between 35 - 54 years, where 20 (6.5%) individuals were above 55 years. Married participants form 63.7% of the sample, singles account for 28.1%, while divorced widowed were 4.6% and 3.6% respectively.

Regarding the level of education 149 (48.7%) had university degree or above, while 98 (32.0 %) had secondary degree, only 29 (9.5%) had primary school education, 30 (9.8%) had preparatory level. About 72.6% of the participates were employees, 3.6% were unemployed, house wives account for 16.2% of sample, while students and retired were 4.6% and 3.0 % respectively.

Regarding period of living in Qatar, 44.7% of the subjects were born in Qatar, 20.4% staying in Qatar from 1 - 5 years, 12.2% stayed from 5 - 10 years, and 22.7% stayed more than 10 years in Qatar.

In terms of presence of other chronic diseases such as diabetes mellitus, hypertension, coronary artery disease and bronchial asthma, 126 (41.2%) of respondents had one or more chronic diseases only 18 (5.9%) individuals had previous psychiatric illnesses (anxiety and or depression). In terms of unhealthy lifestyle among the participants, 16.3% use tobacco 2.6% use alcohol.

In the social context, 242 (79.3%) of the respondents of the screened participants

Variable	N (%)
Nationality	
Qatari	102 (33.3%)
Non Qatari	204 (66.7%)
Gender	
Male	131 (42.8%)
Female	175 (57.2%)
Age	
18- 34 years	152 (49.7%)
35- 54 years	134 (43.8%)
> 55 years	20 (6.5%)
Education	
Primary	29 (9.5%)
Preparatory	30 (9.8%)
Secondary	98 (32.0%)
University and above	149 (48.7%)
Occupation	
Employee	220 (71.9%)
Non employee	11 (3.6%)
Housewife	49 (16.0%)
Student	14 (4.6%)
Retired	9 (2.9%)
Income	
1500-3000 QR	47 (15.4%)
3000- 7500 QR	107 (35.0%)
7500-10000QR	49 (16.0%)
>10000QR	60 (19.6%)
Marital status	
Single	86 (28.1%)
Married	195 (63.7%)
Divorced	14 (4.6%)
Widow	11 (3.6%)
No of children	
<3	117 (38.2%)
4-7	61 (19.9%)
>7	16 (5.2%)
House	
Room	48 (15.7%)
Flat	98 (32.0%)
Villa	116 (37.9%)
Others	44 (14.4%)
Period of stay in Qatar	
Since birth	136 (44.4%)
1-5 years	62 (20.3%)
5-10 years	37 (12.1%)
>10 year	69 (22.5%)

Table (2) distribution of the socio demographic characteristics of the studied group (n=306)

were living away from their families. And in terms of presence of conflict, 63 (20.6%) of individuals were found to have marital conflicts, while work conflicts present in 18.6% of our sample.

Of the 306 participants we found that 85 (27.8%) screened positive for clinically significant depressive symptoms (PHQ-9 score of 10 or higher), while 24.8% had minimal depressive symptoms (PHQ-9 score less than 10) as shown in Figure -1. Of those who have significant symptoms 47 (15.4%) had PHQ-9 scores between 10 and 14 (moderate depressive symptoms), 28 (9.2%) had PHQ-9 scores between 15 and 19 (moderately severe major depression) and 10(3.3%) had PHQ-9 scores of 20 and above (severe major depression).

The influence of socio-demographic characteristics on the prevalence of depressive disorders is shown in Table 3. The highest frequency of depression was among young age group (18-34) which accounts for 61.2%, followed by the (35-54) age group (32.9%), and the least was old age group > 55 years 5.9%. Persons with secondary, university and above studies had the higher frequency of depression 41.2%, and 33.0% respectively (P=0.029), while persons with primary education level had less frequency (9.4%).

Table-4 shows unmarried subjects (singles, divorced and widowed) were more prone to have clinically significant depression (53.0%). Persons who were living in Qatar since birth had the highest frequency of depression (59.5%) while those who stayed >10 years had the lowest frequency 11.9%.

For other demographics such as nationality, gender, occupation, income and number of children, they were not significant.

Although there was a strong relationship with previous history of psychiatric illnesses e.g. anxiety and or depression (P=0.00), as shown in Table-5, there was no significant relationship between chronic disease and depression.

We found a statistically significant relationship between marital problems, work conflict, smoking, alcohol drinking and presence of significant depressive symptoms (P=0.05).

Discussion

A number of earlier studies have shown that primary health care physicians often under diagnose depressive disorders and lack the needed skills for recognizing, responding, diagnosing and treating depression disorders.(10,11,12) This is understandable since primary health care physicians are confronting an array of complex problems, and depressed patients often see their doctors for a reason other than depression in the PHC setting.

The overall prevalence of significant depressive disorder in our study was (27.8%) which is similar to the prevalence reported in Saudi Arabia (28.5%)(13), and lower than the prevalence in Kuwait (37.1%).(14) Our study has shown that only 3.3 % of our patients were found to have severe depression, which is consistent with other studies. (15-17) Also it was supported by a study conducted by Chen et al which showed that 4.1% of Chinese- American primary care patients had moderate to severe levels of depression. (12)

In the present study, a variety of socio-demographic and medical factors have been considered in an attempt to explain the highest rate of depression disorders.

Regarding the age we found that young age group was more prone to have depressive disorders than the older one; this result comes in support of current literature stating that depression is common among children and young adults, but is unrecognized. (15)

On the other hand these results were comparable with a study which was conducted in UAE(19), and studies from the USA which showed that life time prevalence of major depression in adolescents and young adults (15-24
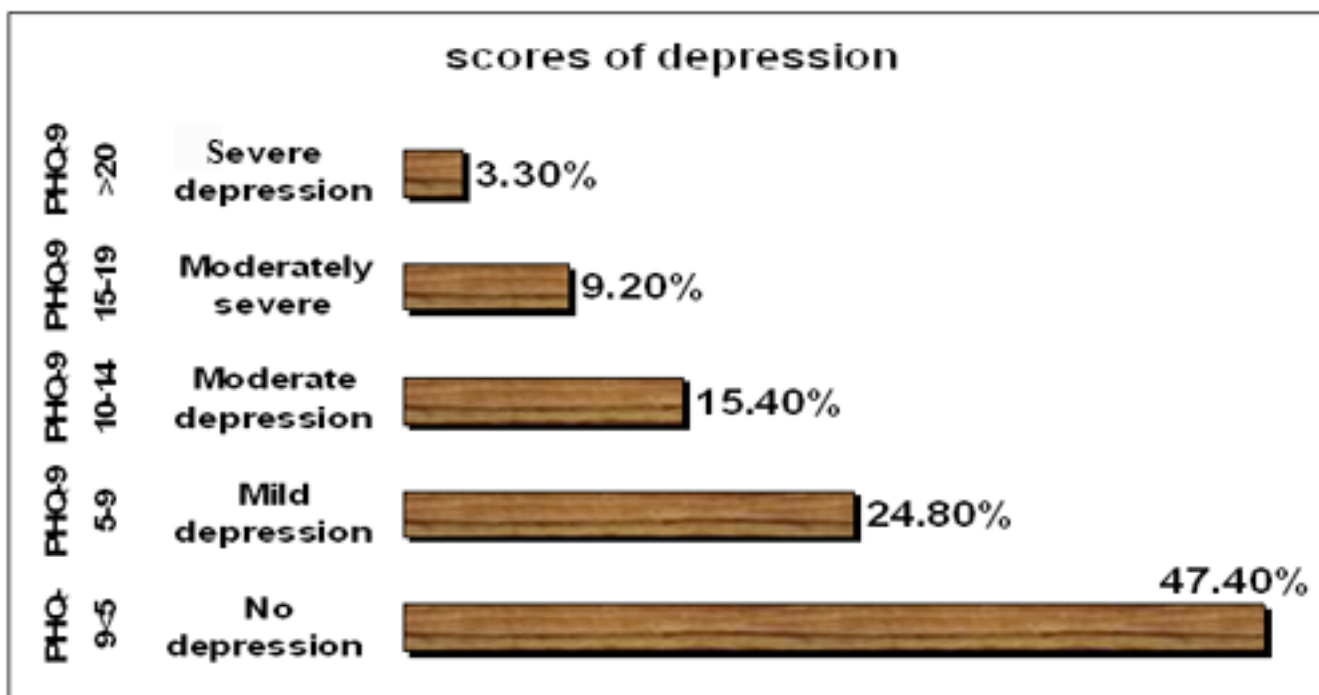
Figure (1) percentage of level of depressive symptoms according to PHQ-9 scores.

Variable	N %
Any chronic disease	26 (41.2%)
Diabetes Mellitus	57 (18.6%)
Hypertension	53 (17.3%)
Coronary Heart Diseases	6 (2.0%)
Bronchial Asthma	22 (7.2%)
Others	19 (6.2%)
Previous psychiatric history	18 (5.9%)
Living away from family	242(79.1%)
Marital problems	63 (20.6%)
Work conflict	57 (18.6%)
Smoking	50 (16.3%)
Alcohol drinking	8 (2.6%)

Table (3) The distribution of risk factors of depression disorders in the study

years) in the US general population has been reported around 20.6% for females and 10.5% for males. Rutter et al suggest a variety of explanations for increasing

prevalence of depression at adolescence age and that increasing level may be genetically determined and these genes triggered at late child hood or adolescence. (20) Family history of depression and school performance are other contributing factors. (20,21)

The association between level of education and depression shows that secondary, university and above studies had the higher frequency of depression, which was consistent with the Kuwaiti study. (14) There is no definite explanation for this result but we suggest that highly educated people may be frustrated about their high expectations and perceptions about society which at times may not be achievable.

However this finding wasn't concluded in some other studies, in which patients with lower educational levels, namely illiterate, were more likely to have clinically significant depressive symptoms.(22,23)

This finding is consistent with our findings that indicated high prevalence of depression among the young group. Also it is more prevalent in unmarried individuals (singles, widowed and divorced) which was consistent with other

studies.(22,23) Social isolation, feeling of loneliness with no close interpersonal relationships and the absence of support at time of crises, all contributes to explanation of our findings.

Although previous studies have shown depressive symptoms were greater among individuals with 3 or more children,(11,14) the present study showed that the number of children did not affect the frequency of depressive disorders.

The current study cannot find a significant relation between different chronic conditions such as diabetes, hypertension, coronary artery disease, or bronchial asthma and depressive disorders. However several studies have shown that there is increase in depression prevalence among individuals living with such chronic diseases. (6,24-26) On the other hand the positive previous history other psychiatric illness was highly associated depressive symptoms. This finding was supported by a study conducted in Saudi Arabia where it was found that persons with history of other psychiatric illness were 7.5 times more likely to have depression than those without history of psychiatric illness. (21).

Variable	No Dep. N %	Mild symptoms N %	Significant Dep. N %	P value
Nationality Qatari Non Qatari	41 (28.3%) 104 (71.7%)	29 (38.7%) 46 (61.3%)	32 (37.6%) 53 (62.4%)	0.189
Gender Male Female	71 (49.0%) 74 (51.0%)	28 (36.8%) 48 (63.2%)	32 (37.6%) 53 (62.4%)	0.118
Age 18- 34 years 35- 54 years > 55 years	58 (40.0%) 76 (52.4%) 11 (6.9%)	42 (55.3%) 30 (39.5%) 4 (5.2%)	52 (61.2%) 28 (32.9%) 5 (5.9%)	*0.032
Education Primary Preparatory Secondary University & above	16 (11.0%) 12 (8.3%) 42 (29.0%) 75 (51.8%)	5 (6.5%) 4 (5.3%) 21 (27.6%) 46 (60.5%)	8 (9.4%) 14 (16.5%) 35 (41.2%) 28 (33.0%)	* 0.029
Occupation Employee Non employee Housewife Student Retired	104 (72.7%) 2 (1.4%) 27 (18.9%) 6 (4.2%) 4 (2.8%)	54 (72.0%) 4 (5.3%) 9 (12.0%) 5 (6.7%) 3 (4.0%)	62 (72.9%) 5 (5.9%) 13 (15.3%) 3 (3.5%) 2 (2.4%)	0.581
Income 1500-3000 QR 3000- 7500 QR 7500-10000QR >10000QR	21 (17.1%) 45 (36.6%) 23 (18.7%) 34(27.6%)	10 (15.6%) 27 (42.2%) 13 (20.3%) 14 (21.9%)	16 (21.1%) 35 (46.1%) 13 (17.1%) 12 (15.8%)	
Marital status Single Married Divorced Widow	25 (17.2%) 108 (74.5%) 7 (4.8%) 5 (3.4%	27 (35.5%) 47 (61.8%) 1 (1.3%) 1 (1.3%)	34 (40.0%) 40 (47.1%) 6 (7.1%) 5 (5.9%	*0.001
No of children <3 4-7 >7	66 (60.6%) 34 (31.2%) 9 (8.3%)	29 (69.0%) 10 (23.8%) 3 (7.1%)	22 (51.2%) 17 (39.5%) 4 (9.3%)	0.570
Period of stay in Qatar Since birth 1-5 years 5-10 years >10 years	47 (32.6%) 29 (20.1%) 21 (13.6%) 47 (32.6%)	39 (51.3%) 19 (25.0%) 6 (7.9%) 12 (15.8%)	50 (59.5%) 14 (16.7%) 10 (11.9%) 10 (11.9%)	* 0.000

Table (4) the distribution of depression cases according to the demographic variables.

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Regarding the influence of social problems on the rate of depression, our findings suggest that a patient's negative life events and social problems, or dysfunctional marital relationship may indicate a high risk for depression. This finding was supported by results from other studies. (27) Also our study showed that unhealthy lifestyle such as smoking and drinking alcohol were significantly associated with high prevalence of depression. There is already evidence that both smoking and alcohol consumption are considered as risk factors for depression. (28,29)

In conclusion, depressive disorders are a highly prevalent condition among attendees of primary health care centers in Qatar, with different socio-demographic factors affecting the prevalence of depressive disorders as age, level of education, marital status, social and work conflicts as well as smoking and alcohol drinking. Undetected psychiatric morbidity is a serious health problem at PHC level, often leading to a waste of resources. More work is needed to improve the psychiatric knowledge and skills of

primary care physicians to identify undetected psychiatric morbidity among their patients. Both training for physicians and increase the public awareness regarding mental health are crucial to detect and manage depression.

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Low Immunization among Children in Slums in Mumbai

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ABSTRACT

This paper examines utilization of immunization services available to the children in slums in Mumbai. The present study is based on the primary data, collected using cluster sampling of sample size of 433 reproductive women who have given at least one live birth prior to the survey. The SLI was constructed from household amenities like, housing quality, drinking water sources, electricity and toilet facilities. The findings revealed a shocking low level of vaccination among the children of 12-23 months old from the Rafi Nagar slum. Primary vaccination was just 48 percent. Even Logistic regression reveals that the children from low SLI category and of illiterate women were not availing themselves of child care services. Thus this paper suggests that the measles vaccination programme has to focus not only its coverage but also its timing to include awareness about immunization programmes especially among the illiterate women.

Keywords: Child Immunization, Vaccination, Utilization, Mumbai Slum

Introduction

Infectious diseases are a major cause of morbidity and mortality in children. One of the most cost effective and easy methods for child survival is immunization. In May 1974, the World Health Organization (WHO) officially launched a global immunization programme known as Expanded Programme of Immunization (EPI) to protect all the children of the world against six vaccine preventable diseases by the year 2000 (Yadav et al., 2006).

The vaccination of children against six serious but preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles) has been a cornerstone of the child health care system in India. As part of the National Health Policy, the National Immunization Programme is being implemented on a priority basis. The Expanded Programme on Immunization (EPI) was initiated by the Government of India in 1978 with the objective of reducing morbidity, mortality, and disabilities from these six diseases by making free vaccination services easily available to all eligible children. Immunization against poliomyelitis was introduced in 1979-80, and tetanus toxoid for school children was added in 1980-81. Immunization against tuberculosis (BCG) was brought under the EPI in 1981-82. In 1985-86, immunization against measles was added to the programme (Ministry of Health and Family Welfare, 1991).

The Universal Immunization Programme (UIP) was introduced in 1985-86 with the following objectives: to cover at least 85 percent of all infants against the six vaccine preventable diseases by 1990 and to achieve self-sufficiency in vaccine production and the manufacture of cold-chain equipment (Ministry of Health and Family Welfare, 1991). This scheme has been introduced in every district of the country, and the target now is to achieve 100 percent immunization coverage. Pulse Polio Immunization Campaigns began in December, 1995, as part of a major national effort to eliminate polio. The standard immunization schedule developed for the child immunization programme specifies the age at which each vaccine is to be administered, the number of doses to be given, and the route of vaccination (intramuscular, oral, or subcutaneous). Routine vaccinations received by infants and children are usually recorded on a vaccination card that is issued for the child.

The National Population Policy (2000) aims at complete protection of all children against vaccine preventable diseases by 2010. Urban poor, many residing in slums, comprise about one-fourth of India's 285 million urban population. 60% of the children aged 12-23 months in urban India are fully immunized; coverage among urban poor children is a dismal 43%. The inter-

service coverage gap which calls for a rethink on resource allocation and strengthening processes to improve immunization coverage amongst urban poor. Debilitating environmental conditions and high population density in slums expedite disease transmission. Comparisons of urban-rural disease incidence indicate a particular urban risk for vaccine preventable diseases.

An attempt (Agarwal et al., 2005) was made to understand the current scenario and challenges in improving immunization coverage in urban slums; immunization being one of the most successful public health interventions of the past century. It also discusses possible mechanisms for effectively reaching the often left-out urban poor. Coordinated activities by the multitude of providers, accurate information based outreach, effective monitoring and community enablement to demand quality services are critical for improving utilization of immunization services by a heterogeneous urban poor population.

Another study (Nath, 2007) was aimed at determining the coverage and to identify the various factors of primary immunization in urban slums of Lucknow district. Mother, father or relative of a total of 510 children with 17 children per cluster were interviewed in the study. About 44% of the children studied were found to be fully immunized. Multinomial logistic regression analysis revealed that an illiterate mother (OR=4.0), Muslim religion (OR=2.5), scheduled caste or tribes (OR=2.3) and higher birth order (OR?2) were significant independent predictors of the partial immunized status of the child; while those associated with the unimmunized status of the child were low socio-economic status (OR=10.8), Muslim religion (OR=4.3), higher birth order (OR=4.3), home delivery (OR=3.6) and belonging to a joint family (OR=2.1) and the study was concluded with the status of complete immunization was about half of what was proposed to be achieved under the Universal Immunization Program which emphasizes the imperative

need for urgent intervention to address the issues of both dropout and lack of access, which were mainly responsible for partial immunization and non-immunization respectively.

The study of an assessment of the service-delivery system in a maternal child health (MCH) clinic in Dhaka city revealed that the rate of missed opportunities for providing immunizations were 44% among children coming to the MCH clinics and one in 10 children aged less than 5 years visited the clinics, with the problem of acute respiratory infection.

Although immunization coverage has increased substantially in recent years, large numbers of slum dwelling children remain incompletely immunized (WHO, 2003). The urban poor, many residing in slums, comprise about one-fourth of India's 285 million urban population (Banthia, 2001). Immunization services do not reach over one third of urban poor children; as only 43% are fully immunized (EHP-USAID, 2003). Hence it was felt necessary to impart knowledge about the status of the immunization among the children in the urban slums where even the mother remains unaware of the existing health facilities available in the area.

Keeping in view the above research work an attempt is made to evolve a suitable strategy for knowing the immunization status of the child in the study area and utilization of child care services and the health facilities available to the children of these mothers in slum in the area of Greater Mumbai, this study has been initiated.

Background of the study area
The city of Mumbai is originally a cluster of seven islands having an area of 603 sq. km. It has grown at a tremendous pace over the years. Between 1941 and 1961 the population grew 2.5 times and between 1961 and 1981 was of two times. Between 1981 and 2001 the population increased from 82 lacs to 120 lacs. Thus the overall population density of Greater Mumbai works

out to be 19,000 persons per sq. km. where Maharashtra's is only 314. This high density of population coupled with dearth of housing has lead to the development of degrading slums.

According to Census of India 2001, about 49 percent of the population of Mumbai lives in slums. About 28 percent and 21 percent of total population is male and female respectively who live in slums.

The present study is an attempt to know:

i) the immunization practice among the study women towards their child,
ii) the health facilities available to these children in the study area and
iii) the utilization of child care services in the study area.

Materials and methods

Measuring household standard of living In the absence of data on income and consumption measures, household standard of living indices are often constructed using three sets of information, namely source of drinking water, toilet facility, type of house and ownership of selected consumer durables (Montgomery et al., 2000). Index scores for the present study ranges from 1-6 for a low SLI to 7-9 for a medium SLI and >=10 for a high SLI (Appendix).

Data
For the present investigation, two stage sampling procedure has been adopted. In the first stage, the slums in Greater Mumbai according to their population size, were listed using the "Directory of Slums" published by office of the additional collector (ENC), Mumbai & Mumbai Sub. Dist. (see reference). Two lists were prepared, one for plain area slums and other for hilly area slums. From plain area slum list, one slum was selected at random. This plain area slum was Rafi Nagar slum located at Deonar, Mumbai which comes under M/E-ward of Brihan Mumbai Municipal Corporation. The

populations of this slum (study area) were 5500 respectively.

In the second stage of sampling, from this selected slum area, using cluster sampling, two clusters were selected at random. From these two clusters of Rafi Nagar slum area 433 households were selected, thus it represents the slum population in Greater Mumbai. The survey was conducted by the trained graduate/ undergraduate girls who normally work with the supervision of doctors/ ANMs for the pulse-polio programme. This survey was conducted from June to August, 2005.

In order to know immunization status, health facilities available in the study area and their utilization, the children born to mothers during the last three years prior to survey were considered.

Method of analysis
Logistic regression analysis was used to assess the effect of socio-economic determinant variables on child care practice controlling for other variables included in the model. For the logistic regression analysis purpose, the births born to mothers in the last three years prior to survey were considered.

Results and discussion
Child Care
Infant breastfeeding practices have significant effects on both mothers and children. Mothers are affected through the influence of breastfeeding on the period of postpartum infertility, and hence on fertility levels and the length of birth intervals. These effects vary by both the duration and intensity of breastfeeding. Proper infant feeding, starting from the time of birth, is important for the physical and mental development of the child. Breastfeeding improves the nutritional status of young children and reduces morbidity and mortality. Breast milk not only provides important nutrients but also protects the child against infection.

Child Vaccination
In the study area the vaccination programme is implemented by taking

Pulse Polio camps. The community volunteers visit the house of the eligible child's mother and bring them to the camp with the eligible child. The immunization begins by asking the question whether mother has an immunization card for the youngest child. The questionnaire also had the same question and investigators questioned study mothers in both the slum areas about the status of the vaccination of the eligible child. If a card was available, the interviewer was required to copy carefully the dates when the child received vaccinations against each disease. For vaccinations not recorded on the card, the mother's report that the vaccination was or was not given was accepted. If the mother could not show a vaccination card, she was asked whether the child had received any vaccinations. If any vaccination had been received, the mother was asked whether the child had received a vaccination against tuberculosis (BCG); diphtheria, whooping cough (pertussis), and tetanus (DPT); poliomyelitis (polio); and measles. For DPT and polio, information was obtained on the number of doses of the vaccine given to the child. Mothers were not asked the dates of vaccinations. To distinguish Polio 0 (polio vaccine given at the time of birth) from Polio 1 (polio vaccine given about six weeks after birth), mothers were also asked whether the first polio vaccine was given just after birth or later.

Table 1 gives the percentages of Rafi Nagar slum children age 12-23 months who received vaccinations at any time before the interview according to whether a vaccination card was shown to the interviewer or the mother was the source of all vaccination information. The 12-23 month age group was chosen for analysis because both international and Government of India guidelines specify that children should be fully immunized by the time they complete their first year of life. Because the date of vaccination was not asked of the mother if she could not show a vaccination card, the proportion of vaccinations given during the first year of life to children whose information is based on the mother's

report is assumed to be the same as the proportion of vaccinations given during the first year of life to children with an exact date of vaccination on the card.

In this survey, children who have received BCG, measles, and three doses each of DPT and polio (excluding Polio 0) are considered to be fully vaccinated and are also standard measure. Based on information obtained from a card or reported by the mother ('either source'), 71 percent of children age 12-23 months are fully vaccinated in Rafi nagar Slum; only 6 percent have not received any vaccinations at all in Rafi nagar Slum area. Coverage for each vaccination except Polio and Measles is much higher than the percentage fully vaccinated in areas. There has been substantial improvement in full vaccination coverage in Maharashtra since the time of NFHS-1 when the proportion of children fully vaccinated was 64 percent. Many more children were brought into the programme in the six years between the surveys. The proportion of children who did not receive any vaccinations declined substantially, from 8 percent in NFHS-1 to 2 percent in NFHS-2. The coverage of all vaccinations, especially vaccination against measles, has improved considerably since NFHS-1. For Maharashtra to attain the goal of full immunization coverage in the near future it has to improve the coverage of the measles vaccination and address the dropout problem for DPT and polio vaccinations.

Government statistics suggest a somewhat higher level of vaccination coverage than NFHS-2 estimates for most vaccinations, although the two sets of estimates are fairly close in the case of BCG and measles. According to government statistics for Maharashtra for 1997-98, 83 percent of children age 12-23 months are fully vaccinated and coverage is 95 percent for BCG, 95 percent for the third dose of DPT vaccine, 96 percent for the third dose of polio vaccine, and 85 percent for measles vaccine (Ministry of Health and Family Welfare, 1999b).

Background characteristics	Child Vaccination									
	BCG		DPT		Polio immediately after birth		Measles		Vitamin A	
Age of Child										
12-23 months	261	96.3	219	80.8	171	63.1	143	52.8	108	39.9
24-35 months	26	92.9	22	78.6	24	85.7	16	57.1	8	28.6
Sex of Child										
Male	189	91.7	157	76.2	126	61.2	96	46.6	66	32.0
Female	173	96.6	146	81.6	115	64.2	90	50.3	63	35.2
Birth order										
1	48	87.3	43	78.2	34	61.8	23	41.8	19	34.5
2	72	94.7	59	77.6	48	63.2	45	59.2	26	34.2
3	76	93.8	68	84.0	51	63.0	41	50.6	28	34.6
4+	166	96.0	133	76.9	108	62.4	77	44.5	56	32.4
Mother's education										
Illiterate	229	93.1	186	75.6	157	63.8	105	42.7	73	29.7
Literate, <middle school complete(1-6)	62	95.4	52	80.0	40	61.5	39	60.0	29	44.6
Middle school complete(7+)	71	95.9	65	87.8	44	59.5	42	56.8	27	36.5
Religion										
Hindu and Others	23	100.0	19	82.6	16	69.6	10	43.5	9	39.1
Muslims	339	93.6	284	78.5	225	62.2	176	48.6	120	33.1
Caste										
SC, ST	27	87.1	25	80.6	15	48.4	12	38.7	14	45.2
Others	335	94.6	278	78.5	226	63.8	174	49.2	115	32.5
Standard of living index										
Low	119	92.2	105	81.4	66	51.2	66	51.2	42	32.6
Medium	158	94.6	130	77.8	114	68.3	81	48.5	63	37.7
High	85	95.5	68	76.4	61	68.5	39	43.8	24	27.0

Table 1: Percentage of Children age 12-23 months who received specific vaccinations by Selected background Characteristics in Rafi Nagar Slum, Deonar, Mumbai.

Sources of Childhood Vaccinations	Rafi nagar, Deonar, Percent
Govt./municipal hosp, Govt dispensary UHC/UHP/UFWC	70.3
pulse polio	26.5
NGO/trust 2.9 hospital/clinic, Private hospital, pvt doctor 0.6	2.9
Others	0.3

Table 1b: Sources of childhood vaccination

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According to the immunization schedule, all primary vaccinations, including measles, should be completed by the time a child is 12 months old. For measles vaccination, however, which is supposed to be given when the child is nine months old, only 48 percent of children in Rafi nagar area who were vaccinated against measles received the vaccination after their first birthday is too low compared with BCG and DPT. These data indicate that the programme has to stress not only on the coverage but also on the timing of measles vaccination.

In the study area, vaccination coverage was higher for girls than for boys. The relationship between vaccination coverage and birth order varies in the study area. In Rafinagar Slum area, as birth order increases vaccination coverage for BCG also increases and for Polio, there is fixed

pattern and for the rest i.e. DPT and Measles, there is no fixed pattern.

Sixty-seven percent of first order births in Rafi nagar Slum area are fully vaccinated, compared with 67 percent of fourth or higher order births which are same as the first order in Rafi nagar area. Sixty-eight percent of children of illiterate mothers in Rafi nagar Slum are fully vaccinated, compared with 75 percent of children whose mothers have at least completed middle school and above.

In Rafi nagar area, not only Hindu and other children are more likely than Muslims children to have received each specific vaccination except measles. Even Hindu children are more likely than Muslim children to be fully vaccinated (74 and 71 percent, respectively). SC, ST children are much less likely than other children to receive each specific vaccination except DPT in Rafi Nagar slum.

The standard of living of the household has a strong positive relationship with vaccination coverage. SLI categories, low, Medium and high category shows consistent increase in receiving each specific vaccination in Rafi nagar slum area except DPT and Measles, in fact it shows negative relationship.

Thus it is concluded that the children of Rafi Nagar slum have not gone for vaccination more in percentage.

Vitamin A Supplementation
Vitamin A deficiency is one of the most common nutritional deficiency disorders in the world, affecting more than 250 million children worldwide (Bloem et al., 1997). The National Programme on Prevention of Blindness targets children under age five years and administers oral doses of vitamin A every six months starting at age nine months. In the survey the investigators asked mothers of children born during the three years before the survey whether their children ever received a dose of vitamin A. Those who said that their child had received at least one dose of vitamin A were asked how long ago the last dose of vitamin A was given. Table 1 shows the percentage of children age 12-35 months who received at least one dose of vitamin A and who received a dose of vitamin

A within the past six months by selected background characteristics. In the slums as a whole, 34 percent of children age 12-35 months received at least one dose of vitamin A in Rafi nagar slum area. This indicates that a very nominal number i.e. just one-third of children in the study area have received vitamin A supplementation. Children from groups that are less likely to have received at least one dose of vitamin A supplementation are also less likely to have received a dose in the past six months. Poorer performance in study areas indicates that the vitamin A supplementation programme is weak in slums of Mumbai.

Table 1 b gives the percent distribution of children under age three years who have received any vaccinations by the source of most of the vaccinations, according to selected background characteristics. The public sector is the primary provider of childhood vaccinations in the study area. In Rafi nagar slum area, seventy percent of all children who have received vaccinations received most of them from a public sector source and only 3 percent received them from a private sector medical source (the corresponding percentages for India as a whole are 82 percent from the public sector and 13 percent from the private medical sector). Thus it can be concluded that the children from Rafi nagar slum area where the majority of Muslims reside, have gone less in percentage for vaccination from public sector i.e. Govt./municipal hosp, Govt dispensary or UHC/UHP/UFWC. But these children have gone for vaccination more in percent from Pulse Polio Center (27 percent) and private sector (3 percent) than Hindu children i.e. just 3 percent and 0.6 percent.

In Mumbai, a much larger proportion of children from non-slum areas received their vaccinations from the private medical sector (44 percent) than children from slum areas (20 percent) (NFHS-2).

Children of more educated mothers and those belonging to households with a high standard of living are much more likely than other children to receive vaccinations from the private medical sector. Muslim children are more likely than Hindu children to receive vaccinations

from the private medical sector, perhaps because Muslims are disproportionately concentrated in urban areas. Children from scheduled tribes and other backward classes are less likely than other children to receive vaccinations from the private medical sector.

Child Morbidity and treatment
This section discusses the prevalence and treatment of acute respiratory infection (ARI), fever, and diarrhoea. Mothers of children less than three years old were asked if their children suffered from fever, cough, diarrhoea or diarrhoea with blood when child was of four-weeks old, and if so, the type of treatment given. Accuracy of all these measures is affected by the reliability of the mother's recall of when the disease episode occurred. Table 2 shows the percentage of children with fever, cough, cough accompanied by fast breathing (symptoms of acute respiratory infection), diarrhoea and diarrhoea with blood when child was of four-weeks old and the percentage with acute respiratory infection who were taken to a health facility or provider, by selected background characteristics.

Acute Respiratory Infection
Acute respiratory infection, primarily pneumonia, is a major cause of illness among infants and children and the leading cause of childhood mortality throughout the world (Murray and Lopez, 1996). Early diagnosis and treatment with antibiotics can prevent a large proportion of ARI/pneumonia deaths.

In the survey, it was found that 21 percent of children under age three in Rafi nagar slum suffered from acute respiratory infection (cough accompanied by short, rapid breathing) at some time when child was of four-weeks old. Table 2 shows that ARI was somewhat more common among boys than girls and among children living in Rafi nagar slum areas. Within Mumbai, ARI was twice as prevalent in slum areas as in non-slum areas (NFHS-2). ARI was also more prevalent among children 1-11 months of age, male children, children of illiterate mothers and

children from households with a low standard of living in the study

Background characteristics	Child suffering with illness when was 4 weeks old									
	Fever		Cough		Breath faster (ARI)		Diarrhoea		Dysentery	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per Cent	No.	Per cent
Age of child										
1-11 months	42	42.9	44	44.9	27	27.6	24	24.5	7	7.1
12-23 months	104	34.1	89	29.2	55	18.0	68	22.3	16	5.2
24-35 months	9	30.0	10	33.3	7	23.3	4	13.3	2	6.7
Sex of child										
Male	80	34.2	75	32.1	51	21.8	56	23.9	11	4.7
Female	75	37.7	68	34.2	38	19.1	40	20.1	14	7.0
Birth order										
1	23	36.5	22	34.9	16	25.4	16	25.4	5	7.9
2	29	34.9	26	31.3	16	19.3	21	25.3	3	3.6
3	28	31.8	27	30.7	21	23.9	21	23.9	8	9.1
4+	75	37.7	68	34.2	36	18.1	38	19.1	9	4.5
Mother's education										
Illiterate	103	36.1	99	34.7	61	21.4	71	24.9	18	6.3
Literate, <middle school complete(1-6)	25	34.7	21	29.2	15	20.8	17	23.6	4	5.6
Middle school complete(7+)	27	35.5	23	30.3	13	17.1	8	10.5	3	3.9
Religion										
Hindu and Others	9	34.6	9	34.6	5	19.2	4	15.4	1	3.8
Muslims	146	35.9	134	32.9	84	20.6	92	22.6	24	5.9
Caste										
SC, ST	13	31.7	13	31.7	8	19.5	5	12.2	1	2.4
Others	142	36.2	130	33.2	81	20.7	91	23.2	24	6.1
Standard of living										
Low	55	36.2	48	31.6	39	25.7	40	26.3	5	3.3
Medium	73	39.7	67	36.4	38	20.7	45	24.5	17	9.2
High	27	27.8	28	28.9	12	12.4	11	11.3	3	3.1
Source of drinking water										
Tap-own	75	44.9	75	44.9	41	24.6	37	22.2	23	13.8
Tap-nearby	44	25.7	38	22.2	23	13.5	38	22.2	1	0.6
Other	36	37.9	30	31.6	25	26.3	21	22.1	1	1.1
Purification of water										
Staining by cloth	94	33.2	84	29.7	56	80.2	64	22.6	21	7.4
Use of alum	29	49.2	28	47.5	13	78.0	7	11.9	3	5.1
Boiling and Other	9	30.0	9	30.0	4	86.7	6	20.0	0	0.0
Nothing	23	37.7	22	36.1	16	73.8	19	31.1	1	1.6
Total	155		143		109		96		25	

Table No. 2: Percentage of Children of 4 weeks old suffering from illness with fever, cough, breath faster, diarrhoea and blood in stool by Selected background Characteristics in Rafi Nagar Slum, Deonar, Mumbai.

children from households with a low standard of living in the study area including Muslim children and 'others' caste children in Rafi nagar slum.

Fever

Fever is the most common of the three conditions examined in Table 2 with 36 percent of children suffering from fever when child was of four-weeks old. The prevalence of fever decreases with the increasing age of child in Rafi nagar slum. Fever is more prevalent among Muslim children, and 'Others caste' children in Rafi nagar slum area. The prevalence of fever is highest among children of birth order of four and more. Fever is less prevalent among children from high standard of living households, and children from households that use 'boiled water and other' for water purification in the study area. Overall, the prevalence of fever is high across all groups of children in Rafi nagar slum as seen from Table 2, indicating the widespread nature of fever affecting children irrespective of their characteristics.

Diarrhoea

Diarrhoea is the second most important killer of children under age five worldwide, following acute respiratory infection. Deaths from acute diarrhoea are most often caused by dehydration due to loss of water and electrolytes. Nearly all dehydration-related deaths can be prevented by prompt administration of rehydration solutions. Because deaths from diarrhoea are a significant proportion of all child deaths, the Government of India has launched the Oral Rehydration Therapy Programme as one of its priority activities for child survival. One major goal of this programme is to increase awareness among mothers and communities about the causes and treatment of diarrhoea. Oral rehydration salt (ORS) packets are made widely available and mothers are taught how to use them. This survey asked mothers of children less than three years old a series of questions about episodes of diarrhoea suffered by their children in the two weeks before the survey, including questions on feeding practices during diarrhoea, the treatment of diarrhoea, and their knowledge and use of ORS. Table 2 shows 21 percent of children under age three suffered

from diarrhoea when child was of four-weeks old.

Among children of Rafi nagar slum area, age 1-35 months, those age 24-35 months are least susceptible to diarrhoea but in the study area, age 6-11 months are most susceptible. The prevalence of diarrhoea is relatively low among children of birth order four or higher, children whose mothers completed middle school, children belonging to 'Hindu and other', children belonging to SC,ST and others, and children living in households with a high standard of living. The prevalence of diarrhoea is particularly high among Muslim children in Rafi Nagar slum. Surprisingly, the prevalence of diarrhoea is same among children living in households that use Tap-own, Tap-nearby or 'Other source' water for drinking, but as expected, it is relatively low among children living in households that purify water by alum but high among those who do not use any method for purification of water in the Rafi nagar slum area.

Six percent of all children age 1-35 months (7 percent of children who suffered from diarrhoea in the two weeks preceding the survey) had Dysentery, or a symptom of dysentery in Rafi nagar slum area. In Rafi nagar slum area, the prevalence of Dysentery falls with the level of education of the mother. Muslim children and 'Others' caste children of Rafi nagar slum area have an elevated risk of having Dysentery.

Table 3 shows percentage of children under age 3 who had illness (fever, cough, ARI, diarrhoea or diarrhoea with blood) when the child was of four weeks old, who was taken to a health facility or provider by selected background characteristics in Rafi nagar slum area.

Eighty-three percent of children in Rafi nagar slum area aged less than 12 months who suffered from illness were taken to the Goverment health facility for medical advice or treatment. 100 percent of children aged 24-35 months from both areas were taken to the Government facility. It indicates that mothers from Rafi nagar slum area are not that attentive towards seeking treatment for illness from a Government health facility when the child was less than 12 months old. A small percentage

of mothers had taken their child to the private health facility and this percent is 10 when the child was 12-23 months old, in Rafi nagar slum.

Treatment seeking behaviour is least among illiterate mothers towards their children and is 81 percent in Rafi nagar slum area. Similarly the same percent for maximum is 88 percent in Rafi nagar slum area. This clearly states that mothers from Rafi nagar slum area are not availing themselves of Government. treatment facilities, available in the area for their children.

Eighty percent of Hindu mothers have availed themselves of a Government. health facility for their children which is the same as for the children of Muslim mothers from Rafi nagar area slum (81 percent).

Percent distribution of children under age 3 who had illness (fever, cough, ARI, diarrhoea, diarrhoea with blood) when the child was of four weeks old, by place of treatment, according to selected background characteristics, Rafi nagar slum, Deonar

'SC, ST ' caste category from the Rafi nagar slum area have utilized less Government. health facilities (78 percent). The same pattern is found in the case of standard of living index category. It seems that the mothers in Rafi nagar slum area are less aware and thus may be reluctant towards availing Government health facilities for their children during their illness, like fever, cough, ARI, diarrhoea, diarrhoea with blood.

Determinants of Utilization of child care services during illness: A Logistic Regression Analysis

Multivariate Analysis

The above discussion referring to Table 2, gives an idea of the relationship between utilization of child care services and the socio-economic predictor variables. However it does not control for the influence of other variables in the analysis and therefore is inadequate. Thus to see the effect of each of the socio-economic predictor variables independent of the other variables, the results of logistic regression are presented. Table 4 shows the odds ratios from logistic regression examining the effect of selected socio-economic variables on utilization of child care services. The odds ratio indicates

Background characteristics	Place of treatment when four weeks child was suffering from illness							
	Govt Health facility		Private Health facility		Other sources		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Age of Child								
<12 months	50	83.3	5	8.3	5	8.3	60	100
12-23 months	105	78.9	13	9.8	15	11.3	133	100
24-35 months	10	100.0	0	0.0	0	0.0	10	100
Birth order								
1	27	77.1	5	14.3	3	8.6	35	100
2	34	87.2	4	10.3	1	2.6	39	100
3	35	87.5	2	5.0	3	7.5	40	100
4+	69	77.5	7	7.9	13	14.6	89	100
Mother's education								
Illiterate	109	80.7	12	8.9	14	10.4	135	100
Literate, <middle school complete(1-6)	26	76.5	3	8.8	5	14.7	34	100
Middle school complete(7+)	30	88.2	3	8.8	1	2.9	34	100
Religion								
Hindu and Others	8	80.0	1	10.0	1	10.0	10	100
Muslims	157	81.3	17	8.8	19	9.8	193	100
Caste								
SC, ST	14	77.8	3	16.7	1	5.6	18	100
Others	151	81.6	15	8.1	19	10.3	185	100
Standard of living								
Low	59	80.8	9	12.3	5	6.8	73	100
Medium	78	83.0	8	8.5	8	8.5	94	100
High	28	77.8	1	2.8	7	19.4	36	100
Total								

Table 3 Place of treatment for different illness

the effect of each of the socio-economic factors on the utilization of child care services in the study area, controlling for other variables included in the model.

The odds ratio decreases with improvement in the position of the study women in respect of mother's education only in the case of child suffering from ARI, Diarrhoea and Dysentery. The odds ratio differed highly significantly by educational attainment when child was suffering from Diarrhoea. For example, the mothers who have completed middle school (7+) whose children are 63 percent less likely to suffer from Diarrhoea than an illiterate mother's children in Rafi nagar slum area whereas the odds ratio decreases with improvement in the position of the study women in respect of mother's education only, except those WHO completed middle school (1-6) in the case of child suffering from illness with cough and ARI.

Odds ratios are not significant by religion and caste in the case of children suffering, from Rafi nagar slum area. Buddhist's children are less likely to suffer than Hindu i.e. 2 times and 5 times when child is suffering from Cough and Diarrhoea respectively.

Socio-economic determinants	Ill with fever		Ill with cough		Breathe faster (ARI)		Had diarrhoea		Blood in stool	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
Religion										
Hindu and Others (Ref)		1.00		1.00		1.00		1.00		1.00
Muslims	.896	.938	.769	.865	.985	1.011	.919	.938	.922	.889
Caste										
SC, ST (Ref)		1.00		1.00		1.00		1.00		1.00
Others	.473	1.34	.753	1.138	.700	1.202	.118	2.361	.441	2.513
Mother's education										
Illiterate (Ref)	.967	1.00	.558	1.00	.769	1.00	.047	1.00	.735	1.00
Literate, <middle school complete(1-6)	.795	.930	.377	.775	.878	.951	.728	.896	.797	.863
Middle school complete(7+)	.955	.985	.441	.804	.469	.780	.014	.369**	.440	.608
Standard of living										
Low (Ref)	.132	1.00	.390	1.00	.043	1.00	.010	1.00	.039	1.00
Medium	.563	1.141	.359	1.239	.279	.753	.665	.895	.040	2.935**
High	.145	.660	.636	.873	.012	.402**	.003	.332***	.865	.881
Constant	.108	.475	.147	.510	.032	.305	.012	.204	.001	.018

****P<.001   ***P<0.01   **P<0.05   *P<0.10

Table 4: Results of Logistic Regression: Effect of Socio-economic variables on illness of child in the Rafi nagar slum area, Deonar

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The odds ratio also decreases with improvement in the position of the children of study women in respect of standard of living index number. Children from Medium SLI category from Rafi nagar slum area are 3 times more likely to suffer from illness Dysentery than children from low category SLI. This may be due to environmental unhygienic atmosphere in the slum.

High SLI category children are 40 percent and 33 percent less likely to suffer from illness ARI and Diarrhoea respectively than low category SLI children. Children from Medium SLI category from Ramabai nagar slum area are 22 percent less likely to suffer from illness with fever, 25 percent less likely to suffer from illness with cough, 25 percent less likely to suffer from illness with ARI, 26 percent less likely to suffer from illness with Diarrhoea and 5 percent less likely to suffer from illness Dysentery respectively than children from low category SLI.

This study finds that the extent of utilization of services pertaining to child immunization and child care which was found to be very low among the children of illiterate women, low category of standard of living women, Hindu, and SC-ST women. The role of socio-economic factors in service utilization is clearly evident in the study area. Logistic regression shows that the socio-economic background conditions have a strong impact on the utilization of child care services. The odds ratio differed significantly by standard of living category and is very high with respect to child care.

The women from low category of standard of living, SC and ST and other category women, illiterate women and even Hindu and Muslim women are not availing themselves of child care services; which clearly indicates that there is a concentration of women amongst the poorest of the economic stratum who go without adequate child care.

- Thus the reproductive health condition of study women and their children living in this slum area remains poor

- The study would give more clear results if the sufficient large sample size is considered by selecting a higher number of slums which may be the limitation of this study.

Thus this paper suggests that:
- the effective awareness campaign through urban health centers, committed community health workers, easy access to services, better health care delivery system, quality health care, follow-up care should be encouraged
- awareness of every stage of vaccinations is suggested and treatment of child when suffering from child killer diseases like ARI and Diarrhoea are needed for the betterment of reproductive and child health in such slums, particularly to illiterate women and their children.

Acknowledgement

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RISK REDUCTION IN PATIENTS: CAN PRIMARY AND SECONDARY PREVENTION AFFECT THE CORONARY RISK GROUPS?

ABSTRACT

Objectives: Our aim was to assess our patients according to their risk levels for coronary heart disease development in the next 10 years and make interventions for primary and secondary prevention to lower their risk profile.

Methods: All the adult patients attending our day clinic during December 2001- December 2004 were included in the study prospectively. The risks for coronary heart disease were assessed for the next ten years by evaluating sociodemographic and cardiovascular risk factors using the 9-step Framingham's Coronary Disease Risk Prediction Score Sheet for Men and Women Based on Total Cholesterol Level. For statistical analysis, SPSS was used.

Results: From 355 adult patients, 342 could be followed up. 27 had Type 2 diabetes mellitus, 132 had hypertension and 244 had dyslipidemia; 240 patients' body mass indexes were >25 kg/m2; 81 patients were smokers. Three patients had coronary heart disease history. Mean age of females and males were 44.9 11.3, and 46.3 11.9, respectively. Absolute coronary mortality risk was very low in 191 patients (55.8%), 56 patients (16.4%) had low risk, 52 had (15.2%) moderate risk, 42 patients had (12%) high risk and 1 patient had (3%) very high risk. After interventions, successful results were achieved especially in women and in the high risk group.

Conclusion: Family physicians have a great responsibility and can take an active role in primary and secondary prevention and management of coronary heart diseases. They

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should assess coronary risk factors of the patients and provide a guide to management and lifestyle modifications of the patient.

Key Words: coronary heart disease, risk factors, primary prevention

Introduction

As coronary heart disease (CHD) is a very common and important worldwide problem, many attempts are made to decrease its morbidity and mortality rates (1). By 2010, it is expected that there will be 3.4 million cases and 170 thousand deaths because of CHD annually (2). Although its risk factors have been well-known for decades and prevention efforts are increasing, it is not easy to control the disease (3).

Individual risk should be assessed for interventions, as it is difficult to treat especially patients with multiple risk factors. For example patients with lower risks need less aggressive management than high risk patients (4). International guidelines emphasized the importance of assessment of individual global risk, and stated that there should be a certain threshold value to begin medical treatment and for global risk for CV event in the next ten years based on Framingham risk equation (5,6). This sex-specified equation can be used for different ethnic groups (7).

Risk factor reduction should be focused for CHD prevention and to decrease the morbidity and mortality

rates with primary and secondary prevention, which are necessary to improve public health (1). The undeniable benefits of primary prevention in health, length and quality of life are defined and these approaches take their place in commonly used guidelines. Decreasing blood pressure (BP), cholesterol, increasing physical activity, controlling glucose levels in diabetics, weight loss in obese patients and cessation of smoking in smokers significantly decreases end organ damage (myocardial infarction and stroke), health expenditure and mortality. In USA, primary prevention declined the rate of coronary heart disease deaths by one quarter and secondary prevention declined by 29% and in UK, 58% of the fall in mortality is attributable to risk factor reduction, especially blood pressure, cholesterol and smoking(1). Primary prevention accounted for 81% and secondary prevention accounted for 19% decrease in mortality rates. Besides, secondary prevention can add an additional 7.5 years and primary prevention can add 21 additional years to life (1). This means that both primary and secondary prevention can halve the death rates, so it is important to detect the healthy people for risk identification. Successful CHD strategies should focus on secondary and especially primary prevention including healthy diets and non-smoking population. Although the guidelines suggest detection from earlier ages, studies on risk prediction and prevention in adults younger than 40 years of age are limited (8).

Family physicians have more advantages according to other specialties for the modification of risk factors (9). All of the risk factors should be assessed and modifiable ones should be corrected in individual approaches (10).

Our primary goal in this study was to evaluate patients according to their ten-year-coronary heart disease development risks and reduce this risk by interventions. Secondary aims were to define our patient population, to call attention to this important issue and to call attention to the significance of primary and secondary prevention.

Method

Setting

Suleyman Demirel University School of Medicine, Department of Family Medicine was established in August 2000 in Isparta and began to accept ambulatory patients in December 2001. As a "family medicine and check up clinic" admissions were available every day by appointment. Our day clinic was located in the Suleyman Demirel University Hospital which serves up to about 1,500,000 people.

Patients

All the patients above 20 years and who had attended during December 2001-December 2004 were included in this study. All the patients were informed about the procedure and oral informed consent was obtained. For each patient, medical history was revealed and physical examination was made by S.A and/or S.O. Patients were evaluated according to their CV risk factors and their ten-year-risk was assessed by using Framingham risk scoring tables (11, 12). Diagnostic procedures were performed according to international guidelines (13-17). Body mass index (BMI) was used for assessment of obesity (18).

Smoking status was assessed in each patient. For smokers, patient education was given and they were encouraged to quit.

After evaluating the coronary heart disease risk, ten-year-risk points were calculated for the patients. Each patient was categorized in one of five subclasses according to their multifactor CAD risk (9, 19).

Appropriate interventions and treatments for the risk factors were performed. Life style modifications (physical activities, low cholesterol and saturated fat diet, cessation of smoking, etc) patient education and if indicated intervention and/or treatment were applied. Follow-up appointments were organized and at the 24th month a substantial follow-up was held for each patient, to re-evaluate their subsequent risk scores.

Student T, chi-square and correlation tests were used for statistical analysis. A p value smaller than 0.005, was considered to be statistically significant.

Results

Of 355 adult patients, 342 could be followed up (96.3%). Mean age of females and males were 44.9 11.3, and 46.3 11.9, respectively. 185 of them were female (54.1%). 27 had Type 2 diabetes mellitus (T2DM) (7.9%), 132 had hypertension (HT) (38.6%) and 244 had dyslipidemia (DL) (71.3%). 240 patient's body mass indexes were ?25 kg/m2 (70.2%). 81 patients were smokers (23.7%). 3 patients had a CHD history (0.8%).

10 of the 342 patients were thin (2.9%), 92 were normal (26.9%), 151 (44.2%) were overweight, 83 (24.3%) were obese and 6 (1%) were morbidly obese patients. After physical exercise, education and diet arrangement, if still needed, patients were referred to a diet specialist.

Most common presenting symptoms can be seen in Table 1.

The most commonly encountered chronic disease in the medical history of our patients was HT (56.1%). 9 (% 2.6) had T2DM, 6 (1.8%) had chronic obstructive pulmonary disease (COPD), 3 (%0.9) had CHD, 2 (%0.6) had a cancer diagnosis and 51 (14.6%) had other diseases. 180 (52%) had no known chronic disease in their medical history.

261 (76.3%) of patients were either not active smokers at least for 1 year or non smokers. 81 (23.7%) were smoking >20 cigarettes a day. Significant difference was detected in gender distribution and smoking as smoking incidence was higher in males (p=0.0004).

210 of 342 (6.4%) were normal or prehypertensive and the rest were

Most common five symptoms:

Pain	31.9%
Tiredness/Exhaustion	7.3%
Dizziness	4.4%
Dyspepsia	3.8%
Sizzling, burning pain with urination/Dysuria	2.9%

Table 1. Most Common Presenting Symptoms

HDL mg/dl	n	%
40 ↓	27	33.3
40-49	29	35.8
50-59	12	14.8
60 ↑	13	16.0
Total	81	100.0

Table 2. HDL distribution according to smoking status in 81 smokers

	Hypertension +	Hypertension -	P Value
Number	172*	170	
Age	50.9±9.9	40.1±10.6	
Blood glucose	101.5±23.3	96.8±24.4	
Dyslipidemics (n)	131	113	0.056
Low Risk (n)	63	128	0.000
Mild Risk (n)	39	17	0.000
Moderate Risk (n)	38	14	0.000
High Risk	31	11	0.000
Very High Risk	1		0.000
DM (n)	20	7	0.015
BMI (>25)	147	93	0.000

Table 3. Hypertension and Related Entities in Study Population
*Patients with a systolic B.P of 130-139mm/Hg or Diastolic B.P of 85-89 mm/Hg were included in this study. For some of the prevalence assessments these borderline hypertensive patients were accepted as hypertensive so number of hypertensives became 172. The real number is 132.

hypertensive (n=132 (38.6%)); of these 73 (21.3%) had grade I HT, 59 (17.2%) had grade II HT. 91 (68.9%) of hypertensive patients were on antiHT medication whereas 41 (31.1%) were not. There were 38 females, and 35 males with grade I and 33 females, and 26 males with grade II HT. 46.2% of HT patients were male and 53.8% female. There was no statistical significance between grades in male and females (p=0.575). A moderate level association had been found between age and systolic (r=0.472, p=0.03) and diastolic hypertension grade (p=0.000).

The difference between BMI in males and females was statistically significant and higher in females. Being female was found to be a risk factor for high BMI (p= 0.045). A significant, positive, moderate level association had been found between BMI grades and HT (r=0.337, p=0.000) and age (p=0.000, r= 0.327). Distribution of BMI percentage according to gender can be seen in Figure 1.

Mean total cholesterol (T-C) value calculated was 194.9 37.4 mg/dl for females, and 197.9 46.9mg/dl for males. Mean high density lipoprotein cholesterol (HDL-C) was 51.1 12.9 mg/dl in females and 44.6

12.6 mg/dl for males. HDL-C levels were significantly higher in females (p=0.000).

HDL-C level distribution according to smoking status can be seen in Table 2.

Mean age of patients with DL was 46.8 10.6, while it was 42.2 13.2 for the rest. Mean age was significantly higher in dyslipidemics. The difference between mean age of males and females was found significant (p=0.002). HT incidence in dyslipidemics was found to be significantly higher (p=0.031) (Table 3).

Features	Low Risk (Group 1-2) Number of pat.s (n) 247 (72.2%)	Moderate-High Risk (Group 3-4-5) Number of patients (n) 95 (27.8%)	P Value
Age (Mean-years)	42.6±10.8	53.1±10.3	0.000
Weight (mean)	72.3±12.9	79.3±11.9	0.000
BMI (mean)	27.1±5.0	28.0±3.4	0.053
Sys. BP (mean)	121.5±20.8	134.2±20.1	0.000
Dias. B.P (mean)	78.3±14.2	85.3±12.1	0.000
Female (%)	165 (87.3%)	24 (12.7%)	0.000
Male (%)	82 (53.6%)	71 (46.4%)	0.000
Hypertension (n)	102 (59.3%)	70 (40.7%)	0.000
CAD (n)		3 (100%)	0.021
Dyslipidemia (n)	161 (66.0%)	83 (34.0%)	0.000
Number of smokers	45 (50.6%)	36 (44.4%)	0.000

Table 4. Comparison of high and low Risk Cardiac cases

Male sex is associated with higher coronary risk (p=0.000) (Table 5).

Coronary Risk	Female	Male	Total
Low	140 (73.3%)	51 (26.7%)	191 (100%)
Mild	25 (44.6%)	31 (55.4%)	56 (100%)
Moderate	5 (9.6%)	47 (90.4%)	52 (100%)
High	19 (45.2%)	23 (54.8%)	42 (100%)
Very high	0	1 (100%)	1 (100%)
Total	189 (%55,3)	153 (%44,7)	342 (%100

Table 5. Risk Group Distribution According to Gender
(chi square at slope p=0.000)

Coronary Risk	Female	Male	Total
Low	140 (73.3%)	51 (26.7%)	191 (100%)
Mild	27 (43.5%)	35 (56.5%)	62 (100%)
Moderate	8 (14.3%)	48 (85.7%)	56 (100%)
High	12 (38.7%)	19 (61.3%)	31 (100%)
Very high	1 (50%)	1 (50%)	2 (100%)
Total	189 (55.3%)	153 (44.7%)	342 (100%)

Table 6. Risk Group Distribution According to Gender after Interventions
(p=0.0008)

27 of 342 patients (7.9%) had T2DM (18 of them were female). We compared frequency of HT in diabetics and non diabetics. HT incidence in diabetics was found significantly higher (p=0.015). 3 patients had CHD and coronary angiography history (0.9%). 2 of them were males (54 and 79 years of age), 1 was female (43 years).

In our study group; 191 patients (55.8%) had low, 56 (16.4%) had minor, 52 (15.2%) had moderate, 42 (12.3%) had high and 1 (0.03%) had very high coronary risk. There was a strong, positive and significant association between coronary risk and age (r=0.522, p=0.000) (Table 4).

Male sex is associated with higher coronary risk (p=0.000) (Table 5).

After interventions, 191 (55.8%) patients remained low; 62 (18.1%) patients had minor; 56 (16.4%) had moderate; 32 (9%) had high and 2 (0.06%) had very high coronary risk. There was no statistical significance between percentages before and after interventions (p=0.355).

Although there was no statistical significance between risk groups before and after interventions, high risk groups decreased from 42 to 31 (Table 5 and 6). 11 patients consisted of 7 women and 4 men. After

interventions, the most successful results were achieved in decreasing BMI.

Discussion

It is concluded that patients attending our clinic mostly attended because of undiagnosed, untreated or symptoms unresponsive to treatment, that existed for a certain period of time. HT was the most frequent known disease revealed in our patients' medical history and the second was T2DM. About half of the patients had chronic diseases. HT was also the most frequent known chronic disease revealed in our patients' medical history. HT is a very important risk factor for CHD. HT is responsible for 35% of all atherosclerotic cardiovascular events (20,21). HT prevalence is found to be 36.3% for males and 49.1% for females in TEKHARF 2003-2004 cohort which is concordant with our study (22). BP increases with age as expected according to our results and age as an independent risk factor for CHD also affects other risk factors (23) which is concordant with our results.

T2DM prevalence was as high as 7.9% (9.5% in females and 5.9% in males) and this result is in concordance with Turkey results (22, 24). T2DM rates are higher in Turkish immigrants compared with European and Turkey results are also concordant with European countries (25), so one of goals for preventive interventions should be for diabetes. We scanned the patients for T2DM and treated the diabetics.

Smoking rate is 27.6% in our country (26). Our smoking rate is also concordant with the nationwide rate. Smoking has great importance as a risk factor because of its wide usage. Smoking cessation decreases the mortality rate by 17% while decreased smoking rates in healthy people accounts for 83% decrease in mortality rate (1). The major goal is to prevent beginning in childhood and early adolescence as primary prevention is more effective (1). Educational efforts supported by media and school education programs are also important.

DL therapy reduces the risk of acute coronary syndromes (27, 28) and prevention or therapy of dyslipidemias should be one of the major goals (13). In our study we also focused on reducing low density lipoprotein cholesterol (LDL-C), T-C and trigliserid (TG) levels while increasing HDL-C levels.
Obesity was a very important problem especially for women and this result is concordant with most of the literature

(29-31), but in a study which was held in Spain, obesity rate becomes higher in men (32). As decreasing BMI was the most successful intervention, risk group reduction was significantly successful in women (p=0.0008). We concluded that in order to reduce the risk, obesity prevention should be one of the first interventions and in order to achieve the normal weight, healthy life style modifications (healthy diet, exercise, etc.) should be started much earlier.

There are some limitations to this study. We could assess only the second-year follow-up, but as the follow-up rate is high, results can be representative for our patients. There is limited knowledge and conflicting results for the effects of primary and secondary prevention of coronary heart disease (1,33,34), so our study can be accepted as a useful intervention. Although no statistically significant reduction could be achieved in risk groups, it is important to dcrease the number of patients in the high risk group. Further studies are needed to assess the change in cardiovascular events and mortality rates in longer periods.

In conclusion, preventive interventions should begin in early ages in order to have more benefits, and healthy life style behaviors should be focused on in order to achieve primary prevention. Therefore, family physicians have a great responsibility in coronary heart disease prevention and risk reduction.

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Situational analysis of Family Physician utilization of drugs and laboratory investigations at a hospital based primary care clinic, Riyadh, Saudi Arabia

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ABSTRACT

To evaluate prescribing patterns and laboratory requests for patients attending a primary care clinic, in a teaching hospital, Riyadh, Saudi Arabia.

Method:
A cross sectional study was conducted at a teaching hospital primary care clinic, King Khalid university hospital, College of medicine, King Saud University, during January, February and March 2009. Data collection form has been completed by a consultant family physician at the end of the consultation for each patient entering a primary care clinic. Verbal consent has been taken from each patient in the study. The data collection form included: the age, number of drugs prescribed, number of laboratory, radiology, and ECG requests. The data has been collected and analysed by the Statistical Package for Social Sciences (SPSS) version 11.5. P value was considered ignificant if it was less than 0.05%.

Results:
The total number of patients included in the study was 243. The study showed that 75.7% of consultations ended with prescription of drugs to the patients, and 88% of the consultations ended with laboratory requests. Only 9.9% of consultations ended with radiology request, and only 2.5% of consultations ended with ECG order. The cross tabulation between age groups and prescription patterns was significant, as was the cross tabulation between age group and laboratory requests significant.

Conclusion and recommendations:
The prescription patterns of drugs and requesting laboratory investigations at Primary Care level is high, which needs to be reviewed and audited to improve the quality of care and to decrease the cost and burden on the patient and health system facilities.

Further national studies are recommended to assure proper evidence based scientific utilization of resources like drugs and laboratory investigations towards improving the quality of patient care, and to be a more evidence-based, scientific, cost effective health care system.

Introduction

Prescribing decisions make a considerable impact on health and national budgets and require complex personal and professional judgements to be made about physical, psychosocial and cost dimensions of health (1- 7). Cost of medications for chronic conditions continue to escalate, particularly for the elderly (2) . For that reason the primary care physician should be able to decrease costs and improve quality of care(8). In a primary care clinic, not every consultation should end with prescription or laboratory requests, as some patients might need only counseling and proper health education to improve their life styles.

Over the last two decades, health promotion has developed into an accepted strategy for solving public health problems and promoting the health of its citizens. While there have been certain successes marked by improvements in the health of the population and the development of an infrastructure for health promotion, there are few evidence-based research studies that measure health risk status or track health changes over time with defined cost outcome measures (9).

The primary care clinic is the first level of contact with patients, and there is a lot of demand on the primary care physician to order unnecessary laboratory tests to reassure patients' anxiety. One study showed that overinvestigation of common physical symptoms can lead to 'somatic fixation', reinforce anxiety, and deepen depression and isolation, leading to a delay in the appropriate treatment (10) . So it is important to evaluate and audit the prescribing pattern and ordering laboratory investigation among primary care physicians to understand the situation and

to improve the quality of care and decrease the cost of unnecessary laboratory investigations and over-prescribing of drugs

The aim of this study was to evaluate the prescribing pattern and laboratory requests for patients attending a primary care clinic, in a teaching hospital, Riyadh, Saudi Arabia.

Method

A cross sectional study was conducted at a teaching hospital primary care clinic, King Khalid university hospital, College of medicine, King Saud University, during January, February, and March 2009. The data collection form was completed by a consultant family physician at the end of the consultation for each patient entering a primary care clinic. Verbal consent was taken from each patient in the study. The data collection form included: the age, number of drugs prescribed, number of laboratory, radiology, and ECG requests. The data was collected and analysed by the Statistical Package for Social Sciences (SPSS) version 11.5. P value was considered significant if it was less than 0.05%.

Results

The total number of patients included in the study was 243 male patients attending a Primary Care clinic at King khalid university hospital, College of medicine, King Saud University, Riyadh, Saudi Arabia

The study showed that 75.7% of consultations ended with prescription of drugs to the patients and 88% of the consultations ended with laboratory requests. Only 9.9% of consultations ended with a radiology request, and only 2.5% of consultations ended with an ECG order. The cross tabulation between age groups and prescription pattern was significant as was the cross tabulation between age group and laboratory requests.

Discussion

The result of the current study showed that most of the consultations in a primary health care clinic at a teaching hospital ended with prescribing drugs (75.7%), and 88% ended with requesting laboratory investigations. This emphasises how the burden of the cost of this medication and laboratory investigations on the health budget, especially at a primary health care level, so it is important to audit our prescribing patterns and ordering laboratory tests to make sure that it will be evidence- based clinical practice not just to satisfy patient demand.

Although doctors have strategies in order to cope with what they perceive to be unnecessary demands for prescriptions, primary care physicians reported a belief that patients use strategies to obtain prescriptions(11-14) . Working in a governmental sector might make the working physicians unaware of the cost of drugs and laboratory investigations because health services in governmental health institutes are free in Saudi Arabia, while those who work in private health institutes know about the the costs of drugs and laboratory investigations for the patients. Ethically it is important to follow the evidence-based recommendation with ful consideration and respect of patient opinion about his/ her management plan.

On the other hand, teaching all the primary health care physicians the skills of practising evidence based medicine by feasible and friendly methods should also be encouraged. Strategies for encouraging change among the primary health care physicians and overcoming the barriers, should be part of the decision makers' vision.

Lastly, patient values and expectations as well as ethical issues should play a role in determining whether and which interventions should be implemented (15-18)

Conclusion

The prescription patterns of drugs and requesting laboratory investigations at the Primary Care level is high, which needs to be reviewed and audited to improve the quality of care and to decrease the cost and burden on the patients and health system facilities.

Further national studies are recommended to assure proper evidence-based scientific utilization of resources like drugs and laboratory facilities towards improving theq uality of patient care, and to be a more scientific, evidence-based, cost effective Health Care system.

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Tables

Age group (years)	Frequency	Percentage %
12-20	13	5.4
21-39	52	21.4
40- 59	88	36.2
60 and above	90	37
Total	**243**	**100**

Table (1) shows age distribution of 243 patients

Number of drugs	Frequency	Percentage %
No drugs	59	24.3
One drug	34	14
2-4	62	25.5
5-7	69	28.4
8 and above	19	7.8
Total	**243**	**100**

Table (2) shows prescription patterns for patients

Age group	No drugs	1 drug	2-4 drugs	5-7 drugs	8 and above	P value*
12-20	7	4	2	0	0	.000
21-39	33	11	3	3	2	.000
40-59	15	14	26	27	6	.000
60 and above	4	5	31	39	11	.000
Total No. (%)	**59 (23.4%)**	**34 (14%)**	**62 (25.5%)**	**69 (28.4%)**	**19 (7.8%)**	**243 (100)**

* P value is considered significant if it is less than 0.05%

Table (3) shows cross tabulation between prescribing patterns and patient's age groups among 243 participants

Number of laboratory requests	Frequency	Percentage (%)
No laboratory requests	29	12
1 laboratory	40	16.5
2 laboratories	124	51
3 laboratories	38	15.6
4 laboratories	9	3.7
5 laboratories	3	1.2
Total	**243**	**100**

Table (4) shows laboratory request among patients

Age groups	No lab request	1 lab	2 labs	3 labs	4 labs	5 labs	P value*
12-20	7	0	4	2	0	0	.000
21-39	10	12	19	7	4	0	.000
40-59	5	19	47	13	3	1	.000
60 and above	7	9	54	16	2	2	.000
Total	29	40	124	38	9	3	243

* P value is considered significant if it is less than 0.05%

Table (5) shows cross tabulation between patient's age groups and laboratory requests

Radiology request	Frequency	Percentage %
None	219	90.1
One	23	9.5
Two	1	0.4
Total	**243**	**100**

Table (6) shows Radiology requests among patients

Age group (years)	No radiology request	One request	Two requests	P value*
12-20	11	2	0	0.281
21-39	43	9	0	0.281
40-59	82	6	0	0.281
60 and above	83	6	1	0.281
Total	219	23	11	243

* P value is considered significant if it is less than 0.05%

Table (7) shows cross tabulation between age group and radiology request

ECG	Frequency	Percentage
ECG request	237	97.5
No request	6	2.5
Total	**243**	**100**

Table (8) shows ECG requests among patients

Age group (years)	No ECG	ECG requested	P value*
12-20	13	0	0.523
21-39	52	0	0.523
40-59	85	3	0.523
60 and over	87	3	0.523
Total	**237**	**6**	**243**

* P value is considered significant if it is less than 0.05%

Table (9) shows cross tabulation between age group and ECG request

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Hypoglycemia unawareness

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ABSTRACT

Hypoglycemia is one of the limiting factors for tight glycemic control. Recurrent hypoglycemia may lead to development of a condition known as hypoglycemic unawareness. With this condition, the patient can not feel the warning symptoms of hypoglycemia and may collapse suddenly.

The answers to the following questions discuss the main pillars in hypoglycemia:

- Why hypoglycemia is common?

- Why symptoms of hypoglycemia are no longer perceived after recurrent attacks?

- What led to the severe hypoglycemic episode?

Key words: Hypoglycemia, hypoglycemia unawareness, tight glycemic control

Introduction

Hypoglycemia is feared by many patients not only because of the associated physical discomfort but mainly because of the risk of cognitive function deterioration that may lead to loss of personal control and adequate conscious behavior and eventually to coma.

Iatrogenic hypoglycemia has been described ever since the introduction of insulin therapy (1) especially among those attempting to optimize glycemic control (2). Many studies such as DCCT (3) and UKPDS (4) have established the reverse relationship between HbA1c and risk for hypoglycemic events.
In the DCCT, the rate of severe hyperglycemia increased from 20 episodes/100 patients/year to 60 episode/100 patients/year during intensified treatment (3).

Role of insulin in risk of hypoglycemia (5) (6):
The normal insulin goes through the following manner illustrated in Figure 1 (next page):

Under physiological conditions, a considerable part of the secreted insulin is degraded by the liver and the remaining part reaches the peripheral tissues to exert its action. When the insulin is injected into subcutaneous tissue, it reaches the circulation directly and bypasses the liver, so most of the injected amount of insulin will reach the peripheral tissues. With injection of insulin the possibility of hypoglycemic episodes usually will be increased.

Normal glucose counter-regulation:
Glucose homeostasis is based on the equilibrium between insulin and glucagon and other counter-regularity hormones (Figure 2).

Glucose counter-regulation in diabetes:
In type 1 diabetes, loss of insulin triggering to alpha cells in the pancreas make patients unable to use this line of defense when there is decrease in glucose level. So, hypoglycemia usually fails to trigger glucagons responses in type 1 diabetes within years after diagnosis.

Therefore hypoglycemia usually fails to trigger glucagon responses in type 1 diabetes within years after diagnosis. When glucagon responses to hypoglycemia are deficient, adrenalin and autonomic warning symptoms become critical for the integrity of glucose counter-regulation.

Iatrogenic hypoglycemia however attenuates magnitude of adrenaline and autonomic symptoms responses to a subsequent hypoglycemic episode through:

- Shifts the glycemic threshold for these responses to lower levels of glycemia (7)
- Impairs hypoglycemic perceptibility clinically (8)
- Possibly reduces beta adrenergic sensitivity (9)

Any hypoglycemia whether mild, asymptomatic (10), nocturnal (11) or brief (12) can provoke this phenomenon and at the end worsening counter-regulation and recurrent hypoglycemia may ultimately lead to hypoglycemia unawareness.

So, hypoglycemia unawareness is defined as onset of neuroglycopenia before the appearance of autonomic warning symptoms and typified clinically by the inability to perceive hypoglycemia by symptoms.
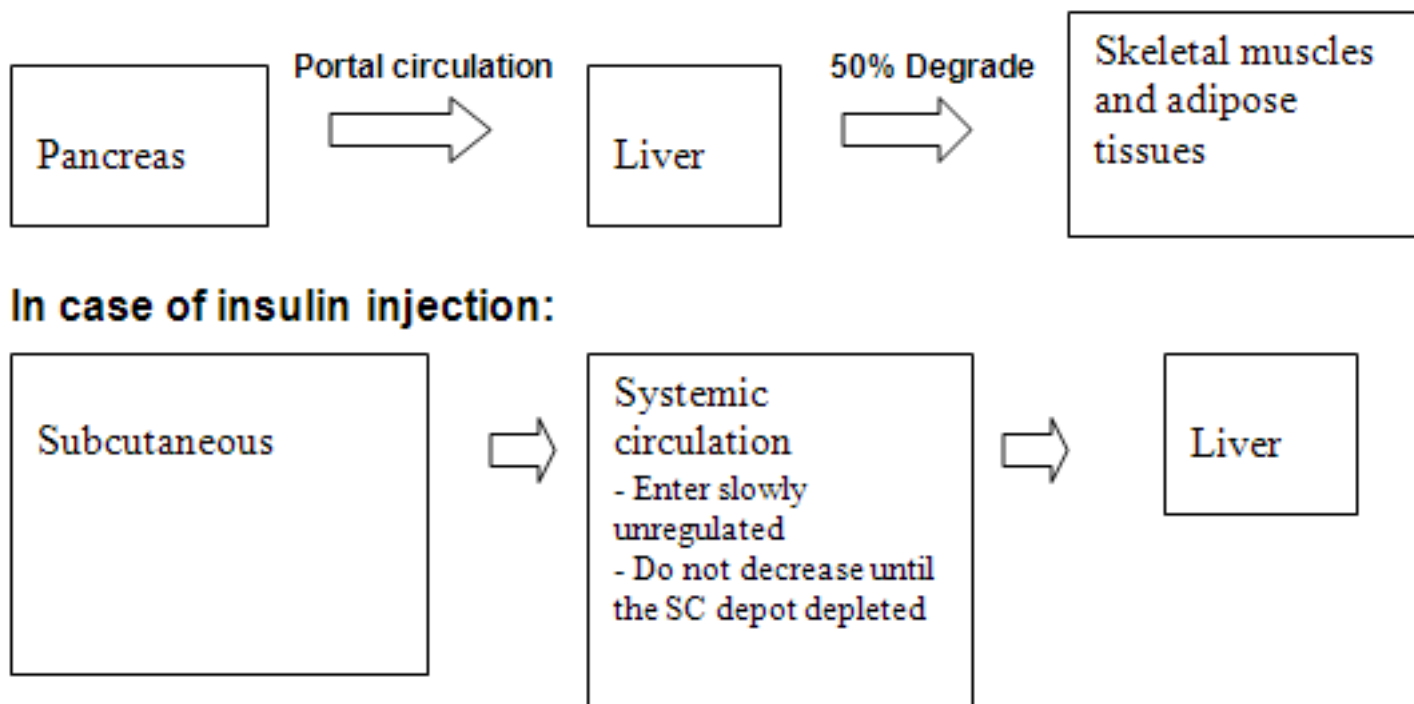
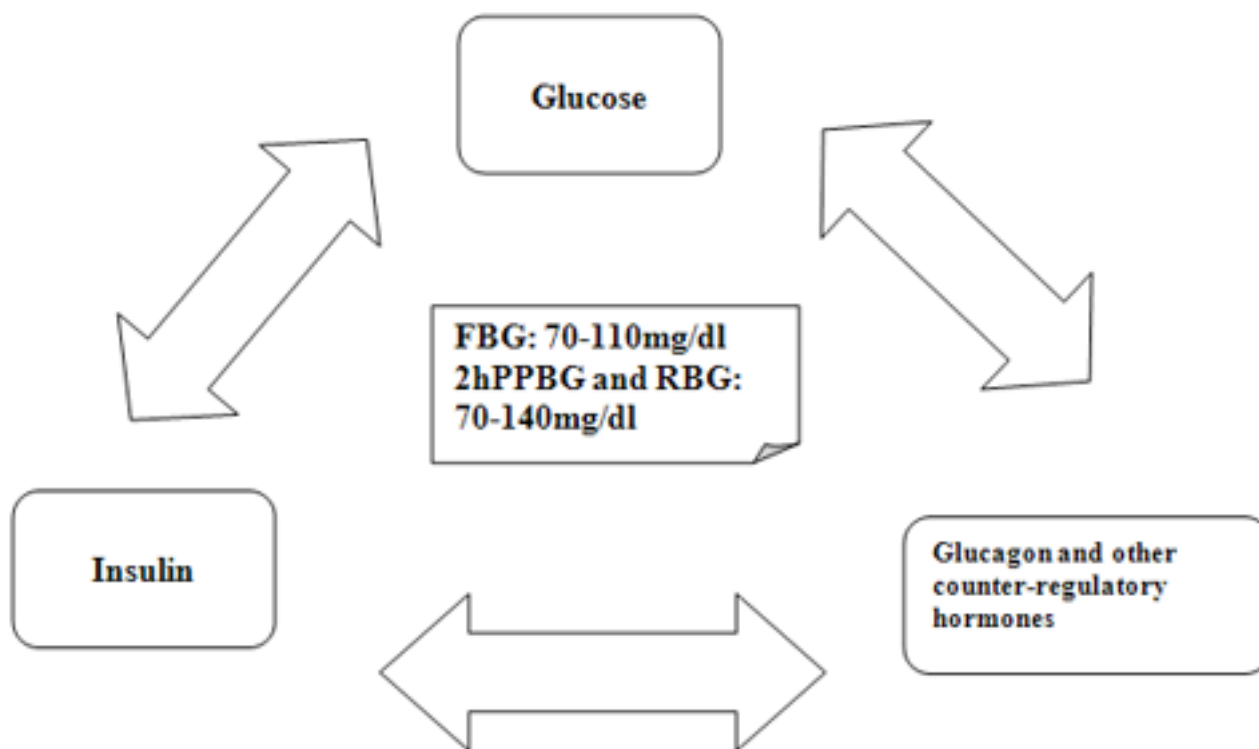**Figure 1: The insulin's pathway in case of normal secreted insulin**

Figure 2: Glucose homeostasis
FBG= Fasting Blood Glucose, 2hPPBG=2 hours Post Prandial Blood Glucose,
RBG=Random Blood Glucose

Various terms are used for the combination of defective hormonal counter-regulation and hypoglycemia unawareness such as counter-regulatory failure, Hypoglycemia Associated Autonomic Failure (HAAF) and hypoglycemia unawareness syndrome.

Pathogenesis of counter-regulatory failure:
Different hypotheses were postulated by the researchers of this paper to explain the counterregulatory failure:

1) It has been hypothesized that increased cortisol levels during antecedent hypoglycemia could act as mediator to reduce counterregulatory responses to subsequent hypoglycemia (13).

2) Many studies on the pathogenesis of counter-regularity failure have focused on the brain. In humans

and rodents, prolonged hyperglycemia was found to increase cerebral glucose uptake. These data lead to the suggestion that recurrent hypoglycemia events preserved or increase brain glucose uptake, thereby shifting hypoglycemic symptoms perception and onset of counter-regulatory responses to lower levels of hypoglycemia (14)

3) Recent antecedent episodes cause alterations in the brain's glucose sensing neurons in the ventromedial hypothalamus that initiate glucose counter-regularity responses. As a result, the onset of counter-regularity responses would then shift to deeper levels of hypoglycemia.

4) Increased glucokinase activity (15), decreased AMP activated PK activity (16), reduced insulin signaling (17) and channel closure (18) have all been suggested as an underlying mechanism but it has not been universally established.

5) Hypoglycemia induced brain metabolism alteration may be involved in the pathogenesis of counter-regulatory defects. Administration of non- glucose substrates for metabolism such as beta hydroxybutarate or lactate during hypoglycemia suppresses counter-regulatory responses (19).

Diagnosis of clinical hypoglycemia unawareness:
Frankly, diagnosis of hypoglycemia unawareness is subject to clinical judgment and there is no specific tool to test for hypoglycemia unawareness.

Clinical signs suggestive of hypoglycemia unawareness include:

- Self reporting of biochemical hypoglycemia unaccompanied by symptoms.
- Loss of autonomic symptoms as initial signs of hypoglycemia
- Recurrent history of severe hypoglycemia
- Reporting lower blood glucose levels are required to elicit symptoms

- Continuous glucose monitoring may help to detect nocturnal or otherwise asymptomatic hypoglycemia

Treatment of hypoglycemia unawareness:

- Reducing hypoglycemic risk factors
- Optimizing insulin treatment
- Pharmacological therapy:
- Alanine to stimulate glucagon response
- Beta2 adrenergic agonist
- Methylxanthine derivative to stimulate CNS
- K channel modulators
- Blood glucose awareness training
- High intensity exercise

In my opinion, the most effective treatment is to decrease the current treatment particularly insulin to avid iatrogenic hypoglycemic attacks. This can be done for 2-3 months before restarting readjustment.

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Awareness of sickle cell disease among youth Corpers in Owo, South-West Nigeria

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ABSTRACT

Aim : This study aimed at determining the awareness of youth Corpers about sickle cell disease among youth Corpers, in a Nigerian community.

Methodology: The study was conducted between January and March, 2009 among youth Corpers in Owo. One hundred and sixteen out of the two hundred and fifty youth Corpers in the community were selected by simple random sampling. The respondents were interviewed with the aid of self administered questionnaire by the authors. The information obtained from the respondents included their bio-data, awareness about sickle cell disease as well as their awareness about haemoglobin genotype.

Result: Most respondents, 113 (97.4%) were aware of sickle cell disease. About a third of the respondents, 34 (30.1%) knew of sickle cell disease through lectures and seminars. The majority of them, 80 (69%) were aware of their haemoglobin genotype.

Conclusion: Most of the respondents were aware of sickle cell disease and their haemoglobin genotype. Health workers should create more awareness about diseases, most especially those with genetic basis, among the populace.

Key words: Sickle cell disease, awareness, youth Corpers .

Introduction

Sickle cell haemoglobinopathy encompasses a group of inherited genetic disorders which cause erythrocytes to become sickle and affect multiple organ systems. Sickle cell haemoglobiniopathy shares the common feature of an abnormal globin chain which leads to sickling of erythrocytes and obstruction of microcirculation.(1) Sickle cell disease is one of the most important haemoglobinopathies.(2) It was first described in a Grenadian dental student in Chicago in 1990.(3) It has been recognized as a problem of major public health importance by the World Health Organization. (4) Sickle cell disease is a genetically transmitted disorder of red blood cells which is characterised by severe haemolysis and recurrent vaso-occlusive episodes.(5) Sickle cell disease is one of the commonest hereditary diseases in the world.(6) It increases the susceptibility of affected individuals to viral and bacterial infections.(7) Sickle cell disease affects millions of people throughout the world and it is particularly common in people of sub-Saharan Africa origin.(8) Sickle cell disease comprises a variety of combinations in which the sickling gene is present with another abnormal genes affecting haemoglobin production or structure.(9) In Africa three forms of sickle cell disease are present which include sickle cell anaemia (HbSS), sickle cell haemoglobin C (HbSC) and sickle cell thalasaemia (HbSSthal).(10) In general about 25% of people of African origin carry the sickle cell gene but only about 2-3% suffer from sickle cell disease.9 In Nigeria the prevalence of HbSS is 1-3% and it poses a severe burden on the affected individuals and their families.(10,11) Sickle cell disease commonly manifests itself as a painful crisis affecting joints and limbs. Factors such as infection, dehydration, exhaustion and a change in temperature may precipitate this crisis. There is a wide variation in the severity of pain, from mild transient attacks to severe pain of longer duration with some patients requiring hospitalization. Even though life expectancy is on the rise for sickle cell disease patients, it is still shorter than that of the general population.(2) Male and female patients with HbSS are reported to have a median life expectancy of 42 years and 48 years respectively

whereas male and female HbSC patients may survive into the seventh decade.(12,13) However in some parts of Africa sickle cell disease is still often lethal In childhood.(14)

The National youth service programme, which is a one year programme, commenced in Nigeria in 1973. Graduates are usually posted to different states apart from their own state of origin unless there are cogent reasons for posting them to their state of origin. There are thirty-six states in Nigeria. The National youth service programme is compulsory and the participants are referred to as youth Corpers.

Awareness of a disease by the medical profession or by the general public is often not commensurate with the disease's frequency or importance.(15) In view of the public health importance of sickle cell disease in this part of the World, the need arose to assess the awareness of sickle cell disease among youth Corpers in Owo, a rural community in South-West Nigeria.

Methodology

This study was conducted between January and March, 2009. One hundred and sixteen youth Corpers out of two hundred and fifty serving in Owo at the time of this study, were selected by simple random sampling and interviewed by the authors with the aid of self administered questionnaire. The interview was conducted at the zonal secretariat of National youth service scheme in Owo during the weekly community development programme. Informed consent was obtained from each of the respondents. The information obtained from the respondents included their bio-data, awareness about sickle cell disease as well as their sources of awareness. The opinion of respondents on the prospects of marriage between individuals who are carriers of the sickle cell haemoglobin was also sought. We also obtained information about respondent awareness of their haemoglobin genotype. The information obtained with the aid of the study instrument (questionnaire) was collated and analyzed with

the aid of SPSS 15.0. 1 Statistical Software version.

One hundred and sixteen respondents participated in this study. Their ages ranged between 20 years and 30 years. The mean age was 26 years±2.5. There were 62 males (53.4%) and 54 females (46.6%). The majority of the respondents were single 99 (85.3%) while the remaining 17 (14.7%) were married. Most respondents 42 (36.2%) were Yorubas, 28 (24.1%) were Ibos, 7 (6%) were Hausas while the remaining 39 (33.6%) were of the other ethnic groups. The respondents were predominantly Christians 97 (83.6%) and the remaining 19 (16.4%) were Muslims.

Knowledge of their haemoglobin genotype: Most respondents 80 (69%), were aware of their haemoglobin genotype while the remaining 36 (31%) were not aware. **Haemoglobin genotype of the respondents:** Most of the respondents 68 (85%) had AA genotype, 11 (13.75%) had AS genotype and the remaining one (1.25%) had SC genotype. **Awareness of sickle cell disease:** The majority of the respondents 113 (97.4%) were aware of sickle cell disease while the remaining three (2.6%) were not aware. The sources of awareness of sickle cell disease as detailed in Table 1 revealed that most respondents 34 (30.1%) were informed about sickle cell disease through lectures and seminar . **Awareness of complications arising from sickle cell disease:** Most respondents 85 (73.3%) were aware while the remaining 31 (26.7%) were not aware. **Awareness of reduction in life expectancy of sickle cell disease patients:** Most respondents 80 (69%) were aware while the remaining 36 (31%) were not aware. **Family history of sickle cell disease:** A few respondents 6 (5.2%) had a family history while most of them 110 (94.8%) did not have a family history. **Respondents' views on marriage between couples of AS genotype:** Most respondents 100 (86.2%) were against it while few 16 (13.8%) were in support.

Discussion

The age range of the respondents is expected in view of the fact that only graduates, thirty years and below, are allowed to participate in the National Youth Service Programme. Those that are over thirty years of age are usually exempted from the youth service scheme. It is not surprising that the three major ethnic groups in Nigeria, namely Yoruba, Ibo and Hausa, are represented in this study in view of the fact that youth Corpers are usually posted outside their state of origin. The percentage of persons in a community with one of the two types of haemoglobin genes (normal or abnormal) is an indication of health awareness of its population.(16) Knowledge of whether one is a carrier or sickler is the responsibility of the person and the entire community.(16) It is impressive that most respondents were aware of their haemoglobin genotype. Our finding is in keeping with another Nigerian study by Moronkola et al in Ibadan which revealed that the majority of their respondents (63.6%) knew their AA haemoglobin genotype.(17) Our finding is also comparable with another Nigerian study by Agbanusi et al in Enugu which reported that only 14% did not know their haemoglobin genotype.(18)

Our finding is however at variance with that of Treadwell et al in which only a few of their respondents knew their haemoglobin genotype status.(19) The fact that only one of our respondents who knew their genotype had HbSC genotype, is expected. This finding is in tandem with another Nigerian study by Adeyemo et al in which only 0.7% of their respondents had HbSC genotype.(20) The high level of awareness about sickle cell disease among the study population is commendable and may have contributed to their high level of awareness about their haemoglobin genotype. A high level of awareness about sickle cell disease is beneficial as it promotes early detection and management of the disease.(6) The level of awareness of sickle cell disease among our study population is higher than that of Vasava et al in India among adolescents, in which only 46.2% of their study population had heard of sickle cell disease.(6) The higher level of awareness of our study population

Source	Frequency	Percentage (%)
Lectures/Seminar	34	30.1
Health worker	31	27.4
Media	22	19.5
Friends/ Peers	8	7.1
Books	7	6.2
Family members	6	5.3
Internet	5	4.4
Total	113	100

TABLE 1 : SOURCES OF AWARENESS ABOUT SICKLE CELL DISEASE

compared with the former study may be due to the fact that our respondents who were graduates are likely to be exposed to opportunities which could widen their knowledge base about diseases, most especially the ones that have a genetic basis. Kudos to Nigerian teachers and lecturers as most of the respondents became aware of sickle cell disease through lectures and seminar. This finding brings to fore the role of school teachers and lecturers in passing across health messages in the school environment. Health workers can promote awareness about common diseases especially those with genetic basis by working closely with school teachers and lectures. The role of Nigerian media in contributing to the awareness of our study population is impressive. However more efforts should be made in creating awareness about diseases through the mass media. The fact that less than half of our respondents were in support of therapeutic abortion if the baby is likely to be a sickler is not surprising. This finding could be due to the religious belief of the respondents. The finding is in tandem with another Nigerian study by Durosinmi et al in which only 45% of their study population will opt for termination of pregnancy if the baby is likely to be a sickler.(21)

Conclusion
Most respondents were aware of sickle cell disease and the majority of them became aware of the disease through lectures and seminar. The majority of our respondents were also aware of their haemoglobin genotype.

Recommendation
1) The school health progammme should be strengthened as appropriate health messages can be passed to students in school.
2) Health workers should play a more prominent role in creating awareness about diseases most especially those with a genetic basis.

3) The populace should be educated about their health through the mass media.

Acknowledgement

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Skin preparation before an injection: Knowledge, attitude and practices among physicians, nurses and patients

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ABSTRACT

Objectives: To assess the present level of knowledge, attitude and practices among university hospital physicians, nurses and patients about the use of alcohol swabbing before an injection

Methods: Cross sectional study. Pre tested, pre designed well structured questionnaire written in English with Arabic translation was administered to volunteer physicians, nurses and patients at King Khalid University Hospital, Riyadh during November 2008 to February 2009. A total of 163 anonymously completed questionnaires were returned to the investigator. Data were analyzed using SPSS-16 and the results expressed as counts and percentages

Results: Most of the participants were deriving their knowledge from mass media (135/163) and health care workers (138/163).

Most of the health care providers knew that an alcohol swab will not minimize the pain (92-96%) or risk of bleeding (84%), whereas the response from patients was mixed. Almost all respondents (98%) were of the view that not using a swab is time saving and economical. However, 88% thought skin preparation will minimize the risk of infection, therefore, would not receive an injection without alcohol swab.

Conclusion: Knowledge about the use of alcohol swab before injection was poor; attitude to change the current practice was negative and the practice of skin preparation before injection was common.

Key words: skin preparation, injection related infection, alcohol swab

Introduction

Injections are among the most common health care procedures throughout the world. There is a general reluctance among the people to accept the injection without cleaning the site with an alcohol swab. According to the World Health Organization, there is a no need to routinely apply alcohol swab for skin preparation before subcutaneous, intradermal and intramuscular injection.
For the purpose of this survey, the term injection refers to intramuscular, intradermal and subcutaneous injections: it does not include intravenous or intra articular injections.

In medical care, an injection is the introduction of a drug, vaccine, contraceptive or other therapeutic agent into the body using a needle and syringe. Injections are among the most common health care procedures throughout the world and are frequently used nursing processes with an estimated 16 billion administered on an annual basis among developing and transitional countries[1-3]

The skin is the largest organ of the body covering its entire surface. It serves as a protective shield against heat, light, injury and infection. Other functions of skin include regulation of body temperature, storage of water and fat. Skin also acts as a sensory organ, prevents water loss and the entering of bacteria into the body. Normal human skin is colonized by large numbers of organisms that live harmlessly as commensals on its surface[4].

Alcohol swab is saturated with 70% isopropyl and thought to be the oldest topical antiseptic used for preoperative skin preparation and as a surgical scrub in the 19th century.

There is a very little evidence to support the need for disinfection of the skin prior to any intradermal, subcutaneous and intramuscular injection. Many studies reported that routine skin preparation by alcohol swab before intradermal, intramuscular and subcutaneous injection is unnecessary[5-11]. Yoshika Kazuaki and colleagues compared distillate water cotton with that of alcohol swab for skin

preparation before a vaccination, and found no infection in both groups. Side effects of using swab were more frequent among alcohol swab users(12).

General practitioners, community practitioners and health visitors associations assessed the incidence of injection related infection as indicated by abscess in the injection site and concluded that one abscess occurs per 1 - 2 million injections13. One study shows that among injecting drug users, skin cleaning may be associated with a lower risk of bacterial infections(14).

According to the recommendation of World Health Organization (WHO), swabbing of the clean skin before giving an injection is unnecessary. WHO further states that, wash skin that is visibly soiled or dirty. If swabbing with an antiseptic is selected for use, use a clean, single-use swab and maintain product-specific recommended contact time. Do not use cotton balls stored wet in a multi-use container. The recommendation for alcohol swab is to wipe the swab for 30 seconds over the site of injection and allow drying for a further 30 seconds to ensure bacteria are rendered inactive (otherwise there may be some increased injection pain)(15-16).

At present, according to policy guidelines in King Khalid University Hospital, use of alcohol swab for the preparation of skin before injection is necessary. We conducted this survey to assess the theoretical knowledge and attitude of the heath care providers and visiting patients towards the use of alcohol swab and to have some awareness and a step towards WHO guidelines.

Subjects and methods

A cross sectional study was conducted among highly educated health care workers and their patients at King Khalid University Hospital, King Saud University Riyadh, Saudi Arabia during November 2008 to February 2009.

For this study, a stratified random sampling technique was used to

present to both male and female physicians, nurses and patients. A pre tested, pre designed, well structured questionnaire, and containing open-ended and close-ended questions written in English with Arabic translation, was administered to participants during working hours i.e. 8:00 am - 4:00 pm. The covering letter of the questionnaire outlined the title and the purpose of the study and the identity of the researcher. Participants were informed about the importance of the study and were encouraged to participate. A questionnaire was divided into various sections to know the current general knowledge, attitude and practices of skin preparation (by 70% isopropyl alcohol swab) before subcutaneous, intradermal and intramuscular injections. Various steps were taken to increase the content validity of the questionnaire. Firstly, a comprehensive review of the relevant literature was carried out. Secondly, a pilot survey of 28 participants was conducted and on the basis of that a few questions were reformed, added or deleted. Lastly, all participants were informed on the issue of anonymity and no identifying information was included in the questionnaire.

Out of 200, one hundred and sixty three anonymously completed questionnaires were returned to the investigator.

Statistical Analysis: Data was entered into spreadsheet and processed on Statistical Package for Social Sciences-16 (SPSS-16). Demographic data and answers of questionnaire were analyzed in a descriptive fashion. Results were expressed as counts and percentages.

Results

Respondent's profile:
Out of 200 distributed questionnaires, 163 (85.5%) completed questionnaires were returned. Among 163 participants, 39 were physicians, 63 nurses and 61 were Patients (Figure 1). Fifteen physicians were from Primary Care Clinics, 13 from

Medicine and Allied, four from Pediatrics, five from surgery and two from Obstetric and Gynecology departments. Nineteen nurses participated from primary care clinics, ten from accident and emergency, eleven from medicine and allied, nine from paediatrics, two from general surgery and twelve from obstetrics/ gynecology departments. Most of the physicians (69%) were board certified and 94% of nurses were registered nurse (RN or BSN). Most of the attendants were surveyed when they came for the vaccination for their beloved. The majority of participating health care providers were Non-Saudis / expatriates (94%), whereas the majority of patients were Saudis (92%).

Out of the 163 respondents, 94 (57.67%) were males and 69 (42.33%) were females; mean age of physicians, nurses and attendants in years were 41, 33 and 39, respectively (Table 1).

Respondent's current knowledge: Most of the participants derive their knowledge from various sources. More than three quarters of the respondents indicated that mass media and health care providers had contributed much to their knowledge about cleansing site of injection before subcutaneous, intradermal and intramuscular injection Other identified sources were magazines, medical books, medical journals and family/friends (Table 2).

The respondents' knowledge about swabbing before injection and injection related infections was poor. More than three quarters of all three participating groups wrongly answered and said "Routine skin preparation with alcohol swab before intradermal, subcutaneous and intramuscular injection will prevent infections".

Almost all health care providers and approximately half of the patients knew correctly that swabbing before subcutaneous, intradermal and intramuscular injection will not minimize the pain before or after an injection.

Variable	Physicians (n = 39)	Nurses (n = 63	Patients (n = 61)
Male, Female	28, 11	11, 52	55, 6
Mean age in years (range)	41 (27 - 58)	33 (23 - 59)	39 (18 - 78)
Mean years qualified (range)	15 (2 - 31)	11 (4 - 38)	
Mean years practicing in *KKUH (range)	8 (1 - 22)	7 (1 - 19)	
Saudi expatriates	6, 33	3, 60	56, 5

*KKUH = King Khalid University Hospital

TABLE 1 Basic characteristics of survey participants

Source of knowledge	Physicians N=39	Nurses N=63	Patients N=61	Total N=163 (%)
Mass media	30	55	50	135 (83)
Magazines	12	14	33	59 (36)
Health personnel	35	58	45	138 (85)
Medical books	28	46	0	74 (45)
Medical journals	36	15	0	51 (31)
Family and friends	11	32	22	65 (40)

TABLE 2 Survey participant's source of knowledge (multiple sources were allowed to choose)

Question (Survey statement)	Response	Physician n=39 (%)	Nurses n=63 (%)	Patients n=61 (%)	Total n=163 (%)
Swabbing before injection will minimize the risk of infection	Yes	31 (79.5)	57 (90.5)	55 (90.2)	143 (88)
	No	8 (20.5)	6 (9.5)	6 (9.8)	20 (12)
Swabbing before injection will minimize the risk of infection	Yes	1 (2.6)	2 (3.2)	33 (54.1)	36 (22)
	No	38 (97.4)	61 (96.8)	28 (45.9)	127 (78)
Swabbing before injection will minimize pain after	Yes	3 (7.7)	3 (4.8)	25 (41.0)	31 (19)
	No	36 (92.3)	58 (92.0)	34 (55.7)	128 (78)

TABLE 3 Participant's response related their Knowledge, Attitude and Practice of alcohol swab wiping before injection.

Some of the physicians (15.38%) and nurses (15.87%) had a wrong belief and mentioned that, "Alcohol swab will minimize bleeding after injection", whereas the majority of them correctly replied to this question. Approximately half of the patients replied to this question correctly.

Unfortunately, about only half of the physicians, two thirds of nurses and two thirds of patients answered correctly that, "if swabbing is selected for use, wipe the swab for 30 seconds over the site of injection and allow drying for a further 30 seconds before giving injection".

Only 22% of participants answered correctly that alcohol swab may affect the contents of injected medication and may affect the mode of action.

Attitude of respondents:
Almost all participants agreed that "Routine use of alcohol swab is time consuming and increases the cost of health budgets". Despite this view, more than two thirds of participants will refuse to receive an injection and will not allow any body to inject them without skin preparation by alcohol swab before an injection. The main reason for refusal was the belief that, "Alcohol Swab will prevent the infection". Furthermore, 99% of participants stated that, "I or my Family had never received an injection without wiping the site of injection with alcohol swab" (Table 3).

Current Practice:
Currently due to the local policy, skin preparation with alcohol swab is in practice at King Khalid University Hospital, Riyadh. Nursing staff are supposed to routinely clean the skin at the site of injection before giving subcutaneous, intradermal and intramuscular injections.

Discussion
This survey was conducted to focus specific education and training programs for health care providers and awareness programs for patients in respect to implementing WHO practice guidelines for safe injections.

Success in reducing the rate of unnecessary skin preparation by alcohol swab before subcutaneous, intradermal and intramuscular injection as per WHO guidelines can only occur if we know the current theoretical knowledge, attitude and

practice of health care providers and patients. This will help to tailor the training and awareness programs for health care personnel and patients. The results of this study clearly shows that WHO guidelines should only be implemented after providing sufficient knowledge and changing the behavior of health care providers by further training, and patients by awareness programs.

In this study the overall knowledge of health care providers is poor regarding routine preparation of skin before injection. According to the findings of this survey, important disadvantages of not using alcohol swabs before injection mentioned increase risk of infection. This concept is not in agreement with those reported earlier both from developing and developed countries(4-7, 9-10). Poor knowledge most likely led to a defective attitude and some misconceptions towards the use of routine alcohol swab.

According to World Health Organization (WHO) best infection control practices, eliminating unnecessary injections is the highest priority in preventing injection-associated infections and when injections are medically indicated, they should be administered safely to protect patients, providers and communities. Furthermore, WHO is against the routine skin preparation before intradermal, subcutaneous and intramuscular injection(15).

Due to the economical crises worldwide, particularly affecting third world countries, we should review the controversial health related procedures which might save the cost and time without compromising health. World Health Organization guidelines on various procedures to prevent injection related infections are easily available, time saving, economical and convenient and without compromising health(15).

The author suggests implementation of the following WHO guidelines on different issues related to injections and prevention of infection.

- The use of sterile injection equipment.
- How to prevent contamination of injection equipment and medication.
- How to prevent needle-stick injuries to the provider.
- How to prevent access to used needles.
- Other practice issue guidelines to prevent injection infection are related to
- Engineered technology
- Importance and necessity of hand hygiene and skin integrity of provider
- Guidelines related to the use of gloves during injection
- How to swab vial tops or ampoules
- Need for skin preparation of patient before injection

Although the findings reported here may be influenced by the inevitable limitations of the study design and the available data, it is believed that the results provide a valuable insight into health care provider and patient's knowledge and attitudes towards routine preparation of skin by alcohol swab before injection in Saudi Arabia. One major limitation of this study is that, the study took place in one hospital of Riyadh city only. However, the questionnaire was anonymous, which should have encouraged accurate and honest self-disclosure.

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