

PAKISTAN JOURNAL OF HEALTH

Official Journal of Institute of Public Health, Lahore.



PAKISTAN JOURNAL OF HEALTH

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Pakistan journal of Health is indexed with the following International Cataloging Services:

1. INDEX MEDICUS FOR WHO EASTERN MEDITERRANEAN REGION (IMEMR)
W.H.O EMRO – Alexandria, Egypt.
2. UNIRICH'S INTERNATIONAL PERIODICALS DIRECTORY
R.R.Bowker, 121 Chanlon Road,
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EFFECTIVENESS OF MOSQUITO REPELLENT BAR CONTAINING DEET AND PERMETHRIN AS PERSONAL PROTECTION AGAINST OUTDOOR MOSQUITOES IN PAKISTAN

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ABSTARCT

The Mosquito Repellent Bar containing 20% by wt. Deet and 0.5% by wt. Med Permethrin was applied to exposed parts of the body i.e. hands, forearms, neck and face of 6 volunteers as personal protection against outdoor human mosquitoes in two locations, National Ayub Park Rawalpindi and CDA Nursery Islamabad, Pakistan on two consecutive days. The predominant mosquito genera collected from these locations were culex and Aedes. Volunteers applied Mosquito Repellent Bar at 1315 hours (6 hours earlier) and tests were initiated at 1915 hours (15 minutes before sunset) 100% protection provided by the Repellent in treated group against biting mosquitoes and residual effect upto 8 hours indicated good protection against these species. None of the individuals subjected to the test showed any discomfort attributable to the repellent.

Key Words: Mosquito Repellent Bar, Deet, Permethrin, Effectiveness, Volunteers.

Introduction

Personal protective measures including repellents are vital for the prevention of vector-borne diseases, such as malaria in military personnel. Repellents are substances which ward off the arthropods on account of their odour and prevent the arthropod vectors from biting and feeding on its host, thus interrupting the transmission of the disease. The repellents differ from insecticide in that they do not actually kill the insects but do prevent them from biting. Thus insect populations do not become resistant to repellents. Repellents are often the only practical means of protecting people from bites of mosquitoes, black these, ticks and other

blood sucking arthropods. Repellents are marketed as liquids, aerosols, sticks, powders, soaps and creams. An ideal repellent should be non-irritant, non-toxic, stainless and harmless to individuals and its effect should last for 10-12 hours¹.

Since the late 1970's the research in the development of personal protective measures against mosquitoes and other biting arthropods is being carried out in various countries of the world. The Mosquito Repellent Bar containing 20% Deet and 0.5% Med. Permethrin developed by the Australian scientist is also an outcome of such research. The current military standard topical repellent, DMP, however, does not provide satisfactory protection against some

important disease vectors, and its effect is rapidly lost in 2-3 hours. A soap formulation of Deet and permethrin applied to the user's skin which would extend the duration of protection to 8-10 hours or longer would be desirable because many species of arthropods are active after dark when the troops are involved in night operations or are sleeping and unable to protect themselves. Deet (N-Dimethyl m Toluamide) has been used as repellent for many years in commercial formulations. Permethrin is a synthetic parathyroid which acts as both a repellent and contact insecticide. The repellent effect on uniforms treated with permethrin is retained for upto 50 washes. The toxicity of Permethrin and Deet has been studied in various trials conducted in different countries and it has been found that these compounds do not have any toxicity towards human beings. Field Studies with permethrin impregnated clothing have been to be effective against mosquitoes ticks, black flies and other biting flies^{3,4,5,6}. Moreover, when permethrin was applied to clothing and Deet was applied to exposed skin, the combination provided 100% protection from the biting of mosquitoes².

The purpose of the study was to determine. The effectiveness of Mosquito Repellent Bar containing. Deet and Med Permethrin against mosquitoes in few selected locations in Rawalpindi/Islamabad, Pakistan.

Materials and Methods

Field studies were conducted on two consecutive days from 07-8-99 to 08-8-99 on the grounds of National Ayub Park Rawalpindi and CDA Nursery

Islamabad. Two different test sites were selected because of high density of mosquitoes in these places and different ecological habitats with different predominant mosquito genera. Test sites were in heavy stands of trees adjacent to open field of grass.

The Mosquito Repellent Bars containing Permethrin and Deet were provided by M/S Park-International (Pvt.) Ltd. Lahore. The content of Deet (N. N-Dimethyl m Tolumide) in the Mosquito Repellent Bar was 20% and that of Med. Permethrin 0.5%. On first day, four volunteers were selected after taking their consent to take part in the study, out of four volunteers two were treated with repellent and two acted as controls. On the second day, six human volunteers (including four of the first day) were selected: Four of these were treated with repellent and two acted as controls. Out of two individuals in the controls, one had the application of Repellent Bar on the first day. For application of Mosquito repellent Bar on the exposed parts of the body i.e. forearm (wrist to elbow), neck, face and ears, first the skin was slightly moistened with water, then bar was applied rubbed gently to form lather and then allowed to dry. The repellent was applied at 1315 hours (6 hours prior to exposure in the field). As a trial, two persons from the treated group (on second day) were asked to do "WAZOO" and say their prayer at 1715 hours (2 hours prior to exposure in the field). The purpose was to note as to whether the Repellent soap gets washed out or otherwise.

All field exposures were made at 1915 hours (15 minutes before sunset) and were continued upto 2015 hours (15

minutes after sunset). when mosquito activity was greatest. The study subjects were trained to count the bites of the mosquitoes on the exposed parts of the body and record them on the study proforma. Volunteers were positioned on folding chairs approximately 15 meter apart with their backs to the prevailing wind. Each person carried collection vials and data sheets. Mosquitoes were captured in individual vials while in the act of biting. Each person recorded total number of bites during the exposure period of one hour on the data sheets.

The efficiency of repellent was judged with the help of the number of bites occurring on the exposed parts of the body and the duration of its lasting effect after its application. The mean temperature and percent relative humidity during the study were 31°C and 41% respectively. The mean number of mosquito bites were calculated for treated and control groups. Percent protection was also calculated for both groups.

Results And Discussion

Table - 1

Effectiveness of Mosquito Repellent Bar against natural Population of Mosquitoes in Pakistan

Treatment	Mean number of bites on exposed parts of skin	Percent Protection
Treated Group	0.0	100
Control Group	30.8	00

Table-I shows the results of field tests and demonstrates that during one hour exposure to mosquito biting, reduction in mosquito biting rates in treated group was 100% including the two treated volunteers, who did WAZOO with water 2 hours prior to exposure. Whereas in the control group, number of bites on exposed parts i.e. forearms, face, neck and ears, were 44,56, 2 and 21 respectively. The reason of only two bites during one hour exposure in one control might be that he acted as a treated group on the first day of study. The treated groups received no bites during the test. The Mosquito Repellent Bar provided 100% protection in treated group. The mean number of bites received on the skin of volunteers were 30.8. The volunteers did not complain of skin irritation or odour. Six men consumed 16 gm of this repellent. Two mosquito genera were identified from these locations i.e. culex and Aedes.

We believe that this new Mosquito repellent Bar promise to be a significant improvement over the standard military repellent, DMP. The DMP evaporates rapidly and its effect is lost in 2-3 hours. It needs reapplication after every 2-3 hours. Whereas soap formulation under study adheres firmly on the skin and its residual effect lasts for 8-10 hours. Therefore, if it is applied at the time of sunset, its effect will last through whole night and is thus convenient. The 100% protection from bites of mosquitoes on treated volunteers recorded during this study might be adequate to significantly reduce transmission of vector-borne diseases like malaria. Its effect is not lost even after ordinary washing the treated parts with

plain water. Its repellent effect gives 60-70% protection against biting mosquitoes even after 30 hours of application as was observed in one control group (who received only 02 bites) on the second day of study.

Mosquito Repellent Bar (20% Deet and 0.5% Med Permethrin) is recommended for use by military personnel on outdoor duties after sunset, instead of DMP (presently in use) one Mosquito repellent Bar (40g) will be sufficient for 15 persons.

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A TIME UTILIZATION STUDY OF TEACHING STAFF WORKING IN MEDICAL INSTITUTIONS AT LAHORE

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ABSTRACT

An observational study was conducted to assess the pattern of time utilized by teaching staff of medical institutions at Lahore. By activity sampling technique, a total of 8880 observations were made of 61 staff members of five medical institutions, i.e. Services Hospital, Jinnah Hospital, Sir Ganga Ram Hospital, Lahore General Hospital and Mayo Hospital. Observations of activities of professor comprised 22.66% of the total observations, while 24.17% observations were of associate professors and assistant professors and 29% of senior registrars. It was observed that the time spent on the productive activities by the professors, associate professors, assistant professors and senior registrars was 63.73 percent, 62.16 percent, 67.10 percent and 71.95 percent respectively. It is recommended that awareness about the time management & punctuality should be created among the managers and consultants and accountability measures should be taken to make best use of important resource.

Introduction

Human resource and time are important resources but effectiveness and efficiency in their use in health sector in general and teaching hospitals in particular have been given little importance.

In the recent years, although some measures like devolution, autonomy of hospitals are a step in that direction but still translating these policies into concrete operational plans to increase efficiency of our health institutions require a lot of developmental work.

The importance of time is known from the times since the creation of this universe but still we do very little to utilize our time effectively. Time is a unique resource, as it cannot be accumulated and in daily life every one has the same amount.

The present study was conducted to assess the time utilization of teaching staff of medical institutions by using the activity sampling technique with the following objectives.

1. To find out the time spent on different activities by teaching staff of medical institutions at Lahore.
2. To find out the difference (if any) in time spent on different activities by different cadres of teaching staff.

Materials & Methods

Three methodologies; retrospective calls, activity sampling technique and work sampling are commonly used to obtain information about time utilization. This study was conducted by Activity Sampling Techniqueⁱ, which has also been used by Bryan M et alⁱⁱ; when he looked at similar issue at

Cameroon for measuring time utilization in 20 rural health Centers; and Ali et alⁱⁱⁱ. Activity Sampling is a method of direct measurement which involves making instantaneous observation of activities of staff members engaged in over a defined time, and has been used in similar other studies in developing countries^{iv,v}.

It was an observational study, which was carried out in medical wards of medical institutions in Lahore. The following institutions were included in the study:

1. Mayo Hospital Lahore
2. Sir Ganga Ram Hospital
3. Services Hospital
4. Lahore General Hospital
5. Jinnah Hospital

All teaching staff in medical wards comprised the study universe and each member of teaching staff was study unit. A checklist was prepared and 16 different codes were allocated to the different activities carried out by teaching staff in medical institutions. Teaching staff of medical wards in all institutions was observed for one week (Monday to Saturday) in normal working time and their activities were recorded in a time log after every 15 minutes according to the activity table. A data entry program was made on Microsoft excel, and all the observations were entered and analyzed with the help of same program.

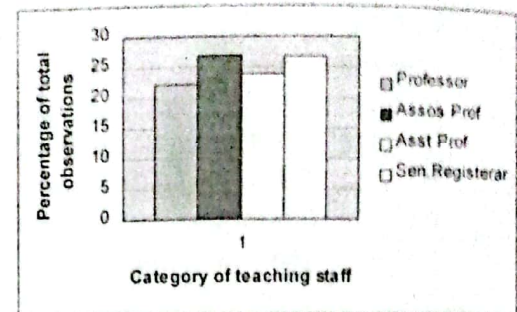
Results

A total of 8880 observations were made of 61 staff members at five medical institutions. Results were expressed as the percentage of total time available, which was spent, on the various activities.

Out of the total observations made 22.67% observations were of activities

of professors, 24.17% each of associate and assistant professors while and 29 % of observations comprised of activities of senior registrar. (Figure -1)

FIGURE 1: Distribution of total observations of teaching staff



It was observed that time spent on different activities vary among the teaching staff. Professor spent only 63.73 percent of their total time on productive activities associate professors 62.16 percent, assistant professor 67.10% and senior registrar 71.95%. Out of productive time utilized, major activity was the ward rounds, which comprised 13.03% of the activities of professors, 18.25% of the activities of associate professors, while assistant professors and senior registrars spent 25.8% and 30.29 % of their time respectively on the ward rounds.

Office work(13.9%) and administrative/supervisory affairs (12.3%) were the other main components of the activities of the professors, while ward demonstrations(11.8%) and OPD(6.24%) were the other main activities of the associate professors. Similarly among the other main activities of assistant professors and senior registrars were OPD, which consumed 9.12% and 11.12% and invasive procedures that consumed 9.98% and 10.46% of the time of

assistant professors and senior registrars respectively.

Out of the non-productive activities, not yet arrived and the tea breaks were the main consumers of time of all the four categories of teaching staff. They consumed 10.64% and 8.24% of the time of professors, 10.34% and 9.7% of the time of associates, 9.41 and 8.8 percent of the time of assistant

professors and 8.11 and 9.15 percent of the time of senior registrars respectively.

Unexplained absence was another component of the unproductive activities which formed 9.4% time of professors, 11% of associates, 6.37% of assistant professors and 7.57% of senior registrars.

TABLE 1: Productive time spent by different teaching staff

<i>Category</i>	<i>Professors</i>	<i>Associate Professor</i>	<i>Assistant Professor</i>	<i>Senior Registrar</i>	<i>Total</i>
Total Observations	2010	2146	2146	2578	8880
Observations on productive activities	1281	1334	1440	1855	5910
Mean Productive time	63.73%	62.16 %	67.10%	71.95%	66.34%

FIGURE 2: Mean of percentage productive time of teaching staff

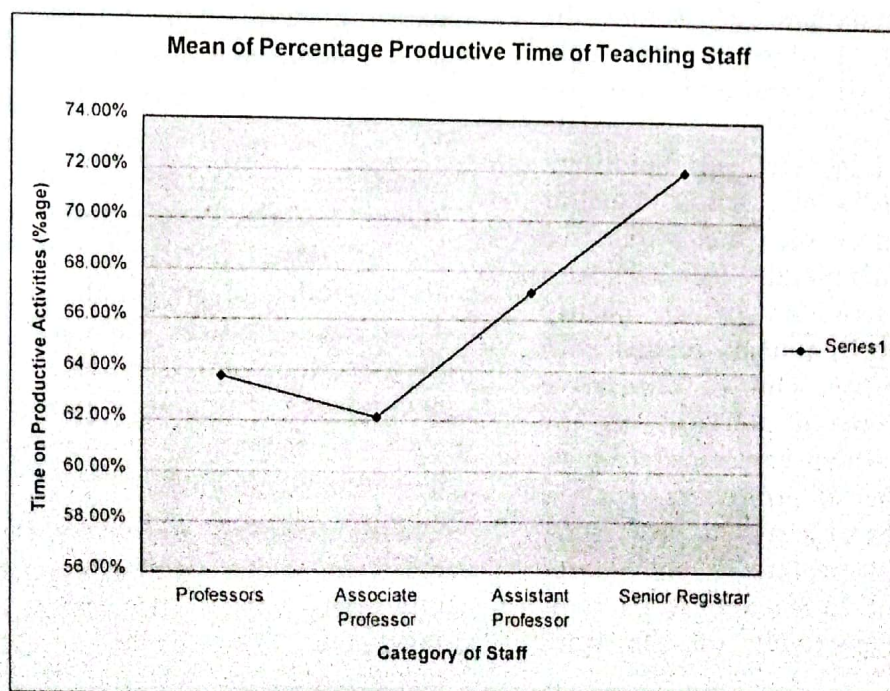


TABLE 2: Distribution of time spent on unproductive activities

	On leave		Late arrival /unexplained absence		Waiting to start work		Tea Break		Total	
	Observations	% of total	Observations	% of total	Observations	% of total	Observations	% of total	Observations	% of total
Professors	24	1.19	403	20.05	136	6.77	166	8.26	729	37.37
Associate Professors	24	1.12	458	21.30	122	5.68	208	9.69	822	38.94
Assistant Professor	96	4.47	332	15.50	94	4.38	186	8.67	706	33.90
Senior Registrar	0	0	379	14.70	84	3.26	222	8.61	723	29.05
Mean	36	1.7	393	17.89	109	5.02	195.5	8.81	2970	35.56

Overall 35.56 % of the time of all teaching staff was spent on the non-productive activities as shown in table 2. As regards their details, tea breaks consumed 8.81% time, late arrival and unexplained absence from work 17.89 percent of the time, while waiting for start of work of start 5.02%.

Discussion

It was observed that time spent on different activities vary among the teaching staff. Professor spent only 63.73 percent of their total time on productive activities associate professors 62.16 percent, assistant professor 67.10% and senior registrar 71.95%. It can be seen that productive time utilization generally increases with decrease in seniority, which clearly shows that use of time is related with the accountability. Out of productive time utilized, major activity was the ward rounds, which comprised 13.03% of the activities of professors, 18.25% of the activities of associate professors, while assistant professors and senior registrars spent 25.8% and 30.29 % of their time respectively on the ward rounds.

Similarly professors and associates spent 37.37 and 38.94 percent of their time on non-productive activities, while assistant professors and senior registrars spent 33.90 and 29.05 percent of their total time on non-productive activities. This is an alarming situation because teaching staff is a precious resource. A huge amount of investment is being done on the training and employment of the teaching staff of the hospitals by the government; and this time utilization pattern is not acceptable by any mean.

The main reason for these anomalies in teaching staff is poor human resource management. There is no job description available for any staff member in any of the institution. The responsibilities are not fixed and there is no proper system for rewards and punishments. It is time to reorganize the teaching faculty in accordance with human resource management principals.

Quality assurance and medical audit are the two tools, which can help in improving the efficiency. Quality assurance in health sector is recommended by WHO in "Strategy for

health for all by the year 2000". Quality assurance refers to programme that set standards, assess the performance of professionals or institutions with respect to these standards. This encourages improvements where performance can be improved and attempt corrective actions. Medical audit is defined variably to include programmes in which doctor's review each other's work for informational and educational purposes.

Recommendation

On the basis of above facts following recommendations are made;

- First of all, awareness should be created among the administrative and teaching about the problem i.e., importance of time management and observation of the punctuality.
- Institutions need to regulate their staff. The institution must develop systems to access the performance of their staff. Quality assurance and proper human resource management will enable the hospital to judge the appropriateness of privileges given to teaching staff.
- Job description and Job analysis protocol should be designed for each member and future promotion should be linked with the regular performance appraisal systems.
- A proper timetable, which is realistic and developed with the involvement of the concerned persons, should be implemented. The faculty members should be asked to come in time and refrain from unexplained absence from their duty.
- There should be a system of rewards and punishments for the punctuality

and the unexplained absence. Similarly, incentive should be given for research. The institutions should provide funds for research purpose and researchers should be given preference for jobs and postings.

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Knowledge of Doctors About Iodine Deficiency Disorders (IDD) in District Kotli Azad Kashmir

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ABSTRACT

Objectives: To assess the knowledge of doctors about Iodine Deficiency Disorders (IDD) in district Kotli Azad Kashmir.

Design: Cross sectional survey.

Place and duration of study: The study was conducted on all the doctors' working/practicing in the district Kotli Azad Kashmir. The period of study was six months starting from May 1, 2000 and ending on October 31, 2000.

Subject/ methods: All the 70 doctors Government servants and private practitioners, working/practicing in the district Kotli Azad Kashmir were included in the study they were interviewed with the help of a preformed questionnaire.

Results: As regards the cause of IDD and commercial source of iodine, 97% of the doctors had the knowledge whereas none of the respondents knew about RDA (recommended daily allowance) of iodine. The knowledge regarding other factors varied between these two extremes.

Conclusions: The cause of IDD and the use of iodized salt for the prevention of the condition were known to the majority of doctors but the knowledge regarding the effect of iodine deficiency and how to use the iodized salt was not up to the mark.

Introduction

Endemic goiter is caused by lack or deficiency of iodine. Iodine is essential for synthesis of thyroid hormones. Thyroid hormones are necessary for body's energy production, growth and development¹, and this is more important in periods of rapid development i.e. fetus and neonate. Iodine deficiency may cause irreversible brain damage and mental retardation in addition to goiter. Such children are hard to educate and adults are lacking initiative and decision-making power^{1, 2}.

The great arc of the Himalayas from Pakistan across India and Nepal, into Northern Thailand and Vietnam and into Indonesia, is one of the most highly endemic regions of the world. The disease used to be a major problem throughout the Andes. It has been reported from New Zealand and from different places in Europe³. The IDD affects over 12% of world's population. In Pakistan over 50% of population is either affected or at risk of being affected by IDD. In Azad Kashmir situation is quite alarming, where over 80% of population is having goiter. This

area remains, one of the most seriously affected in the world^{4,5,6,7,8,9}.

The effects of iodine deficiency on growth and development are denoted by term Iodine Deficiency Disorders (IDD). Goiter is visually obvious and familiar feature of iodine deficiency, but understanding of other consequences of iodine deficiency has greatly expanded in last three decades so a wider designation IDD is now considered more appropriate^{10,11}. As the doctors are not only care-providers, but also they have to play role as team leaders, educators, investigators, decision makers and policy makers¹³. The current study was planned to assess the knowledge of doctors about Iodine Deficiency Disorders (IDD).

Material and Methods

A cross sectional survey was conducted to assess the knowledge of doctors about Iodine Deficiency Disorders (IDD) in district Kotli (Azad Kashmir). All the doctors' working/practicing in the district were included in the study. The Medical officers and general practitioners, both male and females working in the area were included and the specialists and administrators were excluded from the study. The data was collected by an interview and information was recorded on a preformed questionnaire. Verbal

consent was taken before interview. Data analysis was done on EPI Info.

District Kotli (Azad Kashmir)

District Kotli is a hilly area of Azad Kashmir rising gradually toward the high mountains of Poonch district. District Kotli is 76 Km from Rawalpindi /Islamabad. District has an area of 1862 Sq Km and population of 0.559 million.

Findings

There were 70 doctors working in the area, 58 of them were medical officers and 12 were general practitioners. In the urban areas there were 33 doctors out of which 25 were medical officers and 8 were general practitioners. In the rural areas there were 37 doctors out of which 36 were medical officers and 4 were general practitioners. Out of these 10 doctors were females and 60 were males. Out of them 26 doctors possessed postgraduate qualifications. Majority of these doctors 53 had experience of less than ten years.

Table-1

Table one shows the knowledge of doctors regarding iodine, Iodine deficiency disorders (IDD) and its effects

Table-1

Distribution of doctors according to their knowledge about Iodine, Iodine deficiency disorder and its effects

Knowledge of doctors	Knowledge	No Knowledge	Total
Cause of IDD	68(97%)	2(3%)	70
Distribution of IDD in world	22(31%)	48(69%)	70
Distribution of IDD in Pakistan	59(84%)	11(16%)	70
Role of iodine in the body	55(79%)	15(21%)	70
Role of thyroid hormone in body.	63(90%)	7(10%)	70
Effect of iodine deficiency on fetus	29(41%)	41(59%)	70
Effect of iodine deficiency on Neonates	6(9%)	67(91%)	70
Effect of iodine deficiency on Children	19(27%)	51(73%)	70
Effect of iodine deficiency on Adult	19(27%)	51(73%)	70
Deficiency in children (Cretinism)	44(63%)	26(37%)	70
Goiterogenous foods	29(41%)	41(59%)	70
Recommended daily allowance of iodine	00	70(100%)	70
Natural sources of iodine	14(20%)	56(80%)	70
Commercial source of iodine	68(97%)	2(3%)	70
Effect of sunlight/ humidity on iodized salt	31(44%)	39(56%)	70
When to add iodized salt in food	31(44%)	39(56%)	70
Can test Iodine in salt	45(64%)	25(36%)	70
Target groups for health education	38(54%)	32(46%)	70
Agencies working for IDD control	11(16%)	59(84%)	70

Discussion

Evidence reveals a wide range of disorders resulting from severe iodine deficiency; more than 400 million people are affected in Asia alone¹³. These disorders include: still births,

abortions, and congenital anomalies; endemic cretinism, and impaired mental function in children and adults with goiter associated with reduced levels of circulating thyroxine¹⁴. Iodine deficiency is the most common cause of preventable mental retardation and brain

damage, with 1.6 billion people at risk in the world. Children with IDD and its resulting hypothyroidism can suffer from stunted growth, with mental retardation and problems in movement, speech or hearing. IDD actually affects some 50 million children. When a woman with IDD becomes pregnant, she risks miscarriage, stillbirth and mental retardation in her baby. Even what's considered a mild iodine deficiency can hamper the growth of children's brains, reduce their IQ, and cause learning disabilities. There fore it is essential to identify the problem and do the remedial measures. Iodine deficiency in the fetus is the result of iodine deficiency in the mother. The consequence of iodine deficiency during pregnancy is impaired synthesis of thyroid hormones by the mother and the fetus. An insufficient supply of thyroid hormones to the developing brain may result in mental retardation. The brain of the human infant at birth has only reached about one third of its full size and continues to grow rapidly until the end of the second year. The thyroid hormone, dependent on an adequate supply of iodine, is essential for normal brain development. A high degree of apathy has been noted in populations living in severely iodine deficient areas. Reduced mental function due to cerebral hypothyroidism is widely prevalent in iodine deficient communities with effects on their capacity for initiative and decision making^{15,16}. Another consequence of longstanding iodine deficiency in the adult and child is the development of hyperthyroidism. Although the relation of iodine deficiency to endemic goiter is well established, other factors may be involved. A whole variety of naturally occurring agents have been identified

that might be goitrogenic in man some of these goitrogens are synthetic and are used medicinally, others occur in certain widely used food plants.

In the current study an overwhelming majority of doctors 97% had the knowledge regarding the cause of IDD and 31% knew about its distribution in the world and 84% knew about its distribution in the Pakistan. Role of iodine in the human body was known to 79% of doctors and 90% knew about the role of thyroxin in the human body. Effect of iodine deficiency on the fetus was known to 41% of the doctors, on neonates to 9%, on children to 27% and on adults to 27% of the doctors.

None of the respondents know about the RDA (Recommended daily allowance) of iodine, 29% of respondents know about the goitrogenic foods and 20% new about the natural sources of iodine but 97% knew about the commercial source of iodine. Effect of sunlight and humidity on the iodized salt was known to 44% of the doctors, 44% knew about when to add salt in the food and 64% were able to test the content of iodine in the salt. As regards the target groups for health education 54% had the knowledge and 16% were aware about the various agencies working for IDD control.

Conclusions

The cause of IDD and the use of iodized salt for the management of the condition are known to the majority of doctors but the knowledge regarding the effect of iodine deficiency and how to use the iodized salt are not up to the mark.

Recommendations

There is a need to increase the awareness of doctors working in the

IDD endemic areas of Pakistan. This can be achieved through continuing education programs, like short courses and conduction of seminars and workshops.

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PREVALENCE OF TRACHOMA AMONG THE SANITARY WORKERS OF MUNICIPAL CORPORATION, GUJRANWALA

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ABSTRACT

Objectives: To find out prevalence of trachoma among sanitary workers of Municipal corporation Gujranwala

Design: Cross sectional study

Place and duration of study: The study was conducted on the sanitation workers of Gujranwala Municipal Corporation. The period of study was six months starting from May 1, 2002 and ending on October 31, 2002.

Subject/ methods: There are 1955 sanitary staff members working in different categories. All the sanitary workers were examined for the presence of trachoma.

Physical examination was done by Torch and slit lamp and information was recorded on a pre designed form

Results: Out of the 1955 sanitary workers 1857 (95. %) were males and 98 (5%) were females. The prevalence of trachoma in the study population was 12.27%. Prevalence among males was 12.22% and Prevalence of females 13.26%. 58(24.2%) of the trachoma cases were in second stage, 114(47.5%) in third stage and 68(28.3%) in the fourth stage of the disease.

Conclusions: The signs of the disease were present in 12.27% of the sanitary workers. Different preventive measures suggested include health education of the sanitation staff, improvement in personal hygiene, raising the standard of living, adapting different preventive measures during working hours, regular medical and ophthalmologic checkup and supply of free treatment facilities.

Introduction

Trachoma is the world's leading cause of preventable blindness. Trachoma is caused by *Chlamydia trachomatis* that can be spread easily by hands, clothing, or flies that have come in contact with discharge from the eyes or nose of an infected person. The disease generally occurs in

poor countries where people have limited access to water and health care.

Trachoma affects the inner upper eyelid and cornea. Children are especially susceptible to the early, inflammatory stage of the disease. Repeated episodes of reinfection by *C. trachomatis* lead to more scarring and a greater likelihood of

eventual blindness^{1,2,3,4}. Repeated infection leads to scarring, thickening of the conjunctiva, and distortion of the eyelid. The eyelashes begin to rub the eye leading to corneal opacity and blindness, typically in adulthood. Trachoma has an immense impact, globally and in the communities where it is endemic. More than 10 percent of the world's population is at risk of blindness due to trachoma, which has incapacitated families and communities for decades in the poorest regions of Africa, Asia, and the Middle East and in some parts of Latin America and Australia. Trachoma currently blinds some six million people and more than 150 million people are in need of treatment. Globally, the disease results in an estimated US \$2.9 billion in lost productivity each year. WHO has launched a special program for the Global Elimination of blinding Trachoma by the year 2020 ("GET 2020")^{5,6,7}. Its aim is to eliminate trachoma from the poorest areas of Africa and Asia over the next 18 years. Blindness represents a serious public health, social and economic problem. It is especially true for the developing countries, where 9 out of 10 of the world's blind live. Up to 80% of global blindness is avoidable: it either results from the conditions that could have been prevented or can be successfully treated with the sight restored. Today, there is an estimated 180 million people worldwide who are visually disabled. Of these, between 40 and 45 million persons are blind and, by definition, cannot walk about unaided. Around 60% of the world's blind reside in sub-Saharan Africa, China and India [8].

Subject/ Methods

The study was conducted on the sanitation workers of Gujranwala Municipal Corporation. There are 1955 sanitary staff members working in different categories. All the sanitary staff was examined for the

presence of trachoma over a period of six months starting from May 1, 2002 and ending on October 31, 2002. The Examination was done by Torch and slit lamp and information was recorded on a pre-designed form. Data was compiled and tabulated.

Results

Out of the 1955 sanitary workers 1857 (95. %) were males and 98 (5%) were females. The prevalence of trachoma in the study population was 12.27%. Prevalence among males was 12.22% and Prevalence of females 13.26%. 58(24.2%) of the trachoma cases were in second stage, 114(47.5%) in third stage and 68(28.3%) in the fourth stage of the disease.

TABLE- 1

Distribution of trachoma in the study population

Sex	Trachoma		Total
	Present	Absent	
Male	227	1630	1857
Female	13	85	98
Total	240	1715	1955

TABLE- 2
Distribution of different stages of trachoma in the study population

Stages of Trachoma	SEX		TOTAL
	Male	Female	
I	0	0	0
II	55 (24.2%)	3 (23%)	58(24.2%)
III	109 (48%)	5 (38.5%)	114(47.5%)
IV	63 (27.8%)	5 (38.5%)	68(28.3%)
Total	227(95%)	13(5%)	240

Discussion

Trachoma is an important public health problem. Trachoma occurs worldwide and most often in poor rural communities in developing countries. Blinding trachoma is widespread in the Middle East, North and Sub-Sahara Africa, parts of the Indian subcontinent, Southern Asia and China. Pockets of blinding trachoma occur in Latin America, Australia (among native Australians) and the Pacific Islands.

Trachoma is a disease that has been with us from antiquity. It is discussed in ancient Egyptian texts written on papyrus and in even earlier writings from ancient China. Trachoma is an infection of the eyes that may result in blindness after repeated re-infections. It is the world's leading cause of preventable blindness and occurs where people live in overcrowded conditions with limited access to water and health care.

Endemic trachoma persists in areas where living standards are inadequate, with poor personal and community hygiene that permit the frequent spreading of infected eye secretions from one child to another. To stop trachoma, one needs to stop the transmission by improving living conditions [9,10].

In the current study the high prevalence of trachoma (12.27%) among sanitary workers may be due to their type of duty, poor socioeconomic condition, low standard of housing conditions, unhealthy and unhygienic living condition, lack of personal hygiene, dusty and polluted working environment, absence of any protective measures, lack of awareness about the disease and lack of education.

Trachoma is preventable. Primary interventions advocated for preventing trachoma infection include improved sanitation, reduction of fly breeding sites

and increased facial cleanliness (with clean water) among children at risk of disease. The scarring and visual change for trachoma can be reversed by a simple surgical procedure performed at village level, which reverses the in turned eyelashes.

Good personal and environmental hygiene has been proven to be successful in combating trachoma. Encouraging the washing of children's faces, improved access to water [11], and proper disposal of human and animal waste has been shown to decrease the number of trachoma infections in communities.

WHO has launched a special program for the Global Elimination of blinding Trachoma by the year 2020. International efforts to eliminate trachoma as a blinding disease will be based on the WHO-developed strategy - a combination of interventions known by the acronym "SAFE", which stands for surgery for trichiasis (inturned eyelashes), antibiotics, facial cleanliness and environmental improvement. These interventions will be community-targeted and will seek community involvement through the primary health care approach [12,13,14].

Conclusions

The study was conducted to find out the prevalence of trachoma among the sanitary workers of Municipal Corporation Gujranwala. The signs of the disease were present in 12.27% of the sanitary workers. The prevalence was more in females than males. Early diagnosis and proper management can control the disease, which can be blinding. Different preventive measures suggested include health education of the sanitation staff, improvement in personal hygiene, raising the standard of living, adapting different preventive

measures during working hours, regular medical and ophthalmologic checkup by increasing the efficiency of medical services and supply of free treatment facilities.

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THE ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN UNDER FIVE YEARS OF AGE IN DISTRICT LAYYAH

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ABSTRACT

Objectives: To estimate the prevalence of malnutrition in children 0 to 59 months of age and demonstrate its association with various factors.

Design: Cross sectional study

Place and duration of study: The study was carried out at the well baby clinic and vaccination center of Thal Hospital, Layyah. The period of study was one year from February 1, 2001 to January 31, 2002.

Subject/ Methods: A convenient sample of 1000 children was obtained and weight versus age was used as a parameter for the assessment of the nutritional status.

Results: There were 53% males and 47% female children in the study population. General overall picture indicated that 59% children were normal and 41% were suffering from some degree of malnutrition. Out of The malnourished children 21% had first degree, 11% had second degree and 9% had third degree malnutrition.

Conclusions: The current study has revealed that malnutrition in children under five years of age is not the result of a single factor. Multiple factors play an important role in determining their nutritional status. These include maternal education, breast-feeding practice, weaning age, number of children less than five years of age in the family, and socio-economic status of the family.

Introduction

Nutritional status is a condition of health, influenced by the intake and utilization of nutrients. Good nutrition is central to the well being of the individual and therefore of population as a whole. Disturbances in nutrition can have profound and detrimental influences on the person's health. Nutrition is a key determinant of health as under nutrition and over nutrition underline most pathological and disease conditions¹.

Malnourished children are more prone to develop serious infections with fatal outcome and similarly persistent and recurrent infections are likely to precipitate malnutrition in children. Malnutrition's main victims are children under the age of 15 years but the children under the age of 5 years are the worst sufferers. If protein and energy deficiency hits this critical period of active growth, there is failure to gain weight and height.

According to National Survey report (1985-87), 59.5% Pakistani pre-

school children are suffering from malnutrition and only 0.5% of them are above the 90% standard weight for their age^{2,3}.

Assessment of nutritional status is necessary where malnutrition is widely prevalent. It is the first and foremost step in the evaluation of dietary deficiencies and if properly performed and acted upon, the assessment is critical to the prevention of future ill health. Keeping in view these considerations a nutritional survey of children under five years of age was planned to evaluate their nutritional status in Layyah district.

Material And Methods

A cross-sectional study to assess the nutritional status of children under five years of age was conducted. Children 0-59 months of age attending well baby clinic and immunization center of Thal Hospital Layyah were included in the study. The period of study was one year which started on February 1, 2001 and ended on January 31, 2002.

[The District Layyah is located in the South Punjab. It consists of a semi-rectangular block of sandy and katcha lands between the Indus and Chenab Rivers. In its North is District Bhakkar, River Indus runs in its west district Jhang lies in the East and district Muzaffar Garh in the south. The area of this district falls in the climatic zone of sub-tropical continental plains. It consists of rural and urban areas of Towns of Layyah, Kot Sultan, Karor, Fateh Pur and Chowk Azam.]

A sample of 1000 children 0-59 months of age was selected by convenient sampling technique. The mothers were interviewed

after obtaining her formal consent and information was recorded on a pre-designed Questionnaire. The anthropometric measurement used for the purpose of study was weight for age^{4,5,6,7}. Weight of the children was recorded with the help of Lady Health Visitor. Data analysis was done on EPI Info. The value of Chi Square was calculated through stratified analysis.

Results

In the current study 53% of the children were males and 47% were females. 45% of the mothers were illiterate and none of the mothers had education beyond matric. 23% of the families had only one child under 5 year of age in the family and 27% have 4 children under 5 years in the family. 45% families had income less than 2000 RS/ month and 27% had income more than 5000 RS/month. Regarding the duration of breast-feeding 19% of the mothers never breast-fed their child and 36% continued breast-feeding beyond one year. 35% mothers weaned their child at the age of 4 months, 29% at the age of 8 months and 36% at the age of 1 year.

As regards the nutritional status children 590(59%) were normal, 210(21%) had first-degree malnutrition, 110(11 %) had second-degree malnutrition and 90(9%) had third degree malnutrition. Among the male children 350(66%) were normal 110(21%) has first degree, 40(7.5%) had second degree and 30(5.5%) had third degree malnutrition. Among the female children 240(51%) were normal 100(21%) has first degree, 70(15%) had second degree and 60(13%) had third degree malnutrition (Fig-1).

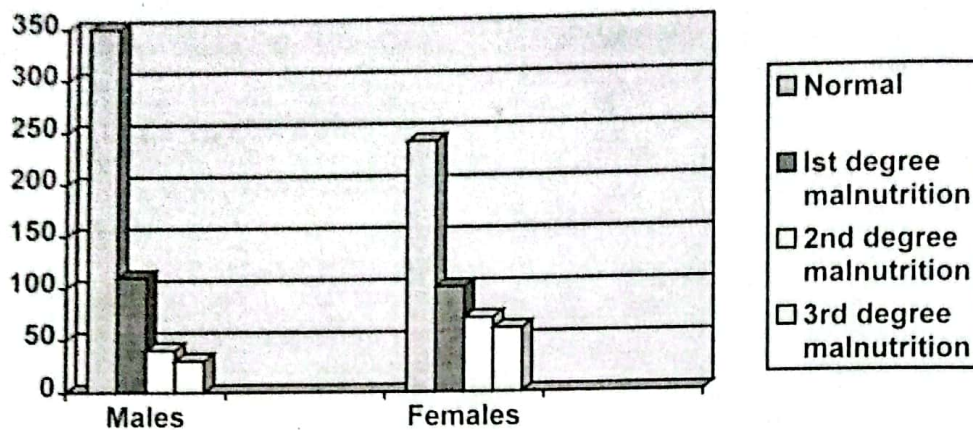


Figure-1: Distribution of malnutrition in relation to sex of the children

TABLE -1: Shows the effect of maternal education on the nutritional status of children. As regards the normal children 220 (37.3%) of the mothers were illiterate, 120(20.3%) mothers had primary and matric education and 130 (23%) had education above matric. As the

malnourished children were concerned 230 (56.1%) of the mothers were illiterate, 110(26.8%) mothers had primary, 40 (9.8%) had matric and 30 (7.3%) had education above matric. The value of Chi Square test at 3 degree of freedom is 73.13 and p value is <0.00.

TABLE -1

Effect of maternal education on the nutritional status of children

Maternal education	Nutritional Status of children				Total
	Normal		Malnourished		
	NO	Col %	NO	Col %	
Illiterate	220	(37.3%)	230	(56.1%)	450
Primary	120	(20.3%)	110	(26.8%)	230
Matric	120	(20.3%)	40	(9.8%)	160
>Matric	130	(23%)	30	(7.3%)	160
Total	590	(59%)	410	(41%)	1000

Chi Square_{3df}=73.13

P value< 0.00

TABLE -2: Shows the relationship of duration of breast feeding with the nutritional status of children Out of the children who were not breast fed 36.8%

were normal and 63.2% were malnourished. The children who were breast-fed for 4-6 months 70% were normal and 30% were malnourished.

Children who were breast-fed for 7 months to 1 year 61.1% were normal and 38.9% were malnourished. Children who were breast fed for more than one year

55.6% were normal and 44.4% were malnourished. The value of Chi Square test at 4degree of freedom is 50.65 and P value<0.00.

TABLE -2

Relationship of duration of breast feeding with the nutritional status of children

Duration of Breast Feeding	Nutritional Status of children				Total
	Normal		Malnourished		
	NO	Row %	NO	Row %	
Never	70	(38.6)	120	(63.2%)	190
3 months	170	(68%)	80	(32%)	250
4 to 6 months	140	(70%)	60	(30%)	200
7 month to 1 year	110	(61.1%)	70	(38.9%)	180
> 1 year	100	(55.6%)	80	(44.4%)	180
Total	590	(59%)	410	(41%)	1000

Chi Square_{4df}=50.65

P value< 0.00

TABLE -3: Shows the Relationship of age at weaning with the nutritional status of children. The children who were weaned at the age of 4 months 80% of them were normal and 20% were malnourished. The children who were weaned at the age of 8 months 51.7% were

normal and 48.3% were malnourished. The children who were weaned at the age of one year 44.4% were normal and 55.6% were malnourished. The value of Chi Square test at 2degree of freedom is 101.68 and P value < 0.00.

TABLE -3

Relationship of age at weaning with the nutritional status of children

Weaning age	Nutritional Status of children				Total
	Normal		Malnourished		
	NO	Row %	NO	Row %	
4 months	280	(80%)	70	(20%)	350
4-8 months	150	(51.7%)	140	(48.3%)	290
8 –12 months	160	(44.4%)	200	(55.6%)	360
Total	590	(59%)	410	(41%)	1000

Chi Square_{2df}=101.68

P value < 0.00

TABLE -4: Table shows the relationship between the numbers of children less than 5 years of age in the family and the nutritional status of children under five. 60 (26.1%) of children were malnourished in the families who had only one child less than 5 years of age. This proportion of

malnourished children increases with increasing number of children less than five years of age in the family reaching up to 150(55.6 %) malnourished children in families who had 4 children less than 5 years of age. The value of Chi Square test at 3 degree of freedom is 45.53 and P value <0.00.

TABLE -4

Relationship of number of children under 5 years of age in the family with the nutritional status of children

No of children	Nutritional Status of children				Total
	Normal		Malnourished		
	NO	Row %	NO	Row %	
1	170	(73.9%)	60	(26.1%)	230
2	160	(61.5%)	100	(38.5%)	
3	140	(53.3%)	100	(41.7%)	260
4	120	(44.4%)	150	(55.6%)	240
Total	590		410		270
					1000

Chi Square3df=45.53

Chi Square_{3df} = 45.53

P value < 0.00

TABLE -5: Table shows the Relationship of family income with the nutritional status of children. In the families with income up to Rs 2000/ month, 250 (50%) children were malnourished. In the families with income from Rs 2000- 5000 /months the number of malnourished

children was 110(36.7%) and in the families with income more than 5000 Rs /month the number of malnourished children was 50(25%). The value of chi-square test at 2 degrees of freedom is 40.24 and P value < 0.00.

TABLE -5

Relationship of family income with the nutritional status of children

Income	Nutritional Status of children				Total
	Normal		Malnourished		
	NO	Row %	NO	Row %	
Up to 2000	250	(50%)	250	(50%)	500
2000-5000	190	(63.3%)	110	(36.7%)	300
More than 5000	150	(75%)	50	(25%)	200
Total	590		410		1000
Chi Square2df=40.24					

Chi Square_{2df} = 40.24

P value < 0.00

Discussion

The Nutritional Status of the children under five years of age attending the well baby clinic and Vaccination center of Thal Hospital Layyah was assessed. Weight for age is considered a sensitive indicator of current nutritional status¹. WHO standards used for malnutrition also suggest that the best parameter used for this purpose is wt./age⁴. Therefore, weight versus age was used as parameter for the assessment of malnutrition, for the present study.

A sample of 1000 pre-school children was studied. There were 53% males and 47% female children in the study population. 41% of the children in the current study were malnourished. Out of The malnourished children 21% had first degree, 11% had second degree and 9% had third degree malnutrition (Fig-1). These findings are consistent with the findings of initial studies^{8,9}. Sex of the child came out to be an important factor in determining the nutritional status of the children. In the study population 59.3% of male children and 40.7% female children were normal 52.4% males and 47.6% females had first degree malnutrition, 36.4% males and 63.6% females had second degree malnutrition and 33.3% males and 66.7% females had third degree malnutrition. Among the malnourished children first-degree malnutrition was predominant among males (Males 52.4% versus Females 47.6%) Second and third degree malnutrition was predominant among female children (Males 36.4% versus females 63.6% and Males 33.3% versus females 66.7% respectively) Fig-1.

There appears an inverse relationship between the mother's education and nutritional status of the children has been observed¹⁰. The status of nutrition of children of educated mothers

improved with the increasing education. The value of Chi Square test at 3 degree of freedom is 73.13 and p value < 0.00 indicating an association between education of mother and nutritional status of the children. (Table-1)

The study has revealed that breast-feeding plays a vital role for the prevention of malnutrition in infancy. The value of Chi Square test at 4 degree of freedom is 50.65 and P value < 0.00 (Table-2) indicating a strong association between duration of breast feeding and nutritional status of the children. Infancy is the most critical period in the development of muscle that is responsible for the anatomical and physiological function in the later life⁹. The continuation of breast-feeding for one year markedly reduces the incidence of malnutrition¹.

Nutritional status of the infants is influenced by the weaning practices along with breast-feeding at the age of 4th month¹¹. In the current study the children who were weaned at the age of 4 months 80% of them were normal and 20% were malnourished. The proportion of malnourished children increases with the increasing age at weaning (Table-3). The value of Chi Square test at 2 degree of freedom is 101.68 and P value < 0.00 (Table-3) indicating an association between malnutrition in children under five and duration of breast-feeding. The infant is dependant on parents for feeding. If weaning is delayed or proper semi solid food is not given then child is likely to develop malnutrition. Delayed weaning at this age is a major contributory factor to produce malnutrition¹².

An association is observed between the numbers of children under 5 years of age in the family and malnutrition in children (Table-4). There were 26.1% children who were malnourished in the

families who had only one child under 5 in the family this increased up to 55.6 % in families who had 4 children less than 5 years in the family. The value of chi-square test at 2 degrees of freedom is 40.24 and P value < 0.00 indicating an association between the numbers of children under five and malnutrition.

The family income is another important factor that has an association with the nutritional status of the children $p < 0.00$. The current study revealed that as the income increased the nutritional status of the children improved. There were 50% children who were malnourished in the income group 2000 RS/month, which falls to 25% in the income group 5000Rs/month (Table-5). The socio-economic status of the family has direct and indirect effects on the child nutrition. The poor families migrate from rural area to urban slums, which cause further congestion in the urban population, producing acute as well as chronic infectious diseases due to multiple factors. The poor families have poor purchasing power and cannot give high protein diet to their children¹². The children from rich families enjoy a balanced weaning diet containing all the essential nutrients, which is freely available to them¹³. The reason of malnutrition in rich families may be because of uneducated mother and food superstition.

The current study has revealed that malnutrition in pre school children is not the result of a single factor, there are multiple factors, which play an important role in determining their nutritional status. These include maternal education, breast feeding practice, weaning age, weaning practices, number of children under five years of age in the family, and socio-economic status of the family and many more.

Conclusions and Recommendations

The current study has revealed that malnutrition in children under five years of age is not the result of a single factor. Multiple factors play an important role in determining their nutritional status. These include the sex of the child, maternal education, breast-feeding practices, weaning age, number of children less than five years of age in the family, and socio-economic status of the family. Following measures should be adopted to improve the nutritional status of children less than five years of age.

- a) The education specially the women's education should be emphasized and measures should be adopted to improve the level of education specially women.
- b) Genders inequality should be addressed to improve the nutritional status of the girls.
- c) Promotion of breast feeding
- d) Education regarding weaning age and weaning foods should be provided to the mothers.
- e) The number of children under five years of age makes the mother more exhausted. There must be proper birth spacing program. Provision of effective comprehensive and cheap family planning services is essential.
- f) Small business financing Programs for individual family development should be adopted to increase in economic status of the family as a whole. So that the availability of food in

sufficient quantity could be ensured.

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PREVALENCE OF OVER-WEIGHT-NESS AND ITS RELATIONSHIP WITH DIFFERENT SUSPECTED FACTORS

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ABSTRACT

A cross sectional study was conducted to assess the prevalence of obesity and its relationship with suspected factors on 200 adult females (16-64years) by random sampling technique in a selected area of Bahawalpur City. According to their body mass index 48% respondents were over weight, more than 45% were in age group of 26-35 years, graduate and, majority belonged to middle and upper class. 65% obese took three meals per day. There has been significant relationship between obesity, physical activity and calorie conscious individuals. It is the time to educate the people on healthy life style especially about, different types of foods, calorie awareness and significance of physical activity to maintain the weight within normal limits.

Introduction

The term overweight means a weight in excess of the average for a given sex, height and age. Overweight is usually due to obesity but can arise from other causes such as abnormal muscle development or fluid retention. (1) Obesity is the most prevalent form of malnutrition in developed and developing countries both among adults and children. It is extremely difficult to assess the size of the problem and compare with different countries as no exact figures are available and also because the definition of obesity is not standardized. However it has been estimated to affect 20-40 percent of the adults and 10 -20 percent of the children and adolescent in developed countries in varying degrees (2).

Prevalence of significantly over weight adults in United States increased by 33 percent from 1991.

Currently over 20 percent of adolescent children and approximately one third of adults in United States are over weight. Nearly 50 percent of African- American women are over weight. It is not clear whether obesity is a direct risk to good health; it unquestionably increases the risk of other diseases including coronary artery disease, diabetes mellitus, hypertension and certain cancers (3). We have largely conquered our external environment. It is the time to conquer our inner environment through proper nutrition (4).

An expert committee of the UK department of health and medical research council identified obesity as one of the most important public health problems of our time (5) But in 1992 the prevalence of obesity was even higher, and the health hazards of obesity were being even better recognized in all the affluent countries of the world.

In developed countries there is an inverse relationship between the prevalence of obesity and socio-economics status. A study in Finland showed that the risk of rapid weight gain ($>5\text{kg}/5\text{years}$) was greatest for people with low educational level, chronic disease, low physical activity during leisure hours, high alcohol consumption and those who stop smoking cigarette (6).

Objectives

- 1) To assess the prevalence of obesity in the community.
- 2) To find out the relationship of suspected factor associated with obesity.

METHODOLOGY

STUDY DESIGN

It was a cross sectional descriptive epidemiological study.

STUDY POPULATION

The study was conducted in selected area of model town C in Bahawalpur City. the population identified for this research comprised of non pregnant adult women aged 16 to 64 years.

STUDY VARIABLES

Independent variables

- 1) Economic status
- 2) Eating habits
- 3) Physical activity

Dependent variables weight

SAMPLE SIZE

Expecting obesity prevalence 20-40 percent in a population to conduct study a sample size according to convenience in time and

resources 200 adult women were interviewed.

SAMPLING TECHNIQUE

Simple random sampling. Total eligible respondents of selected area of model town C were enlisted and sample size i.e. 200 were selected by simple lottery method.

TOOLS OF DATA COLLECTION

1) An interview schedule comprising structured and semi-structured question was used to interview all the respondents including in the study.

2) Weighing machine for measurement of weight.

4) Measuring tape for measurement of height.

BMI was calculated by universal formula.

$BMI = w/h^2$ (weight in Kg in meter height).

<20 = under weight

<25 = normal

$>25-29.9$ = grade 1

obesity (over weight)

$30-40$ = grade 2

>40 = grade 3 (8)

OPERATIONALIZATION OF VARIABLES

Economic status

Respondents were categorized in three groups according to their per month family income. <5000 , $5000-15000$ and >15000 (low, middle, and upper social class).

Eating Habits

Respondents were asked about different eating habits, *meals per days, frequency of taking meat, fruit, soft drinks, fried food, baked food, sweets and chocolates, salad as part of their meal, kitchen work and calorie consciousness in taking meals.*

Physical Activity

Respondents were asked about habit of walk, exercise or workouts.

DATA ANALYSIS

Data is presented in both univariate and bivariate tables. Percentages had been calculated and interpretation presented. Chi square test has been used as test of significant where required.

RESULTS**TABLE-1**

Number of respondents according to their BMI

BMI	Number	Percentage
<25	104	52
25-29.9	64	32
30-40	28	14
>40	4	2
Total	200	100

TABLE-2

Number of respondents according to their BMI and age groups

Age Group	<25		=>25		Total	%
	F	%	F	%		
16-25	40	37.5	16	16.7	56	28
26-35	28	26.9	44	45.8	72	36
>35	36	36.6	36	37.5	72	36
Total	104	100	96	100	200	100

TABLE-3

Number of respondents according to their BMI and educational status

Educational status	<25		=>25		Total	%
	F	%	F	%		
Nil	20	19	16	16.6	36	18
<=10	28	27	20	21	48	24
<=12	20	19	12	12.4	32	16
>=14	36	35	48	50	84	42
Total	104	100	96	100	200	100

TABLE-4

Number of respondents according to their BMI and Economic status

Economic Status	<25		=>25		Total	%
	F	%	F	%		
Low	32	30.8	16	16.6	48	24
Middle	28	26.9	40	41.7	68	34
Upper	44	42.3	40	41.7	84	42
Total	104	100	96	100	200	100

Significant at 0.5

DF =2

TABLE-5

Number of respondents according to their BMI and meals per day (MPD)

MPD	<25		=>25		Total	%
	F	%	F	%		
5	36	34.6	24	25	60	30
3	68	65.4	72	75	140	70
Total	104	100	96	100	200	100

Significant at 0.5

DF=1

TABLE-6

Number of respondents according to their BMI and eating habits

Items	Daily				Often				Occasionally				Total	
	<25		>25		<25		>25		<25		>25		<25	>25
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Meat	12	6	16	8	32	16	28	14	60	30	52	26	200	100
Fruit	60	30	36	18	16	8	12	6	28	14	48	24	200	100
Soft Drinks	12	6	8	4	8	4	12	6	84	42	76	38	200	100
Fried Food	12	6	4	2	16	8	24	12	76	38	68	34	200	100
Baked Food	12	6	4	2	20	10	16	8	80	40	68	34	200	100
Sweets & Chocolates	4	2	0	0	12	6	12	6	88	44	84	42	200	100
Salad	80	40	72	36	12	6	8	4	12	6	16	8	200	100

Not Significant

TABLE-7

Number of respondents according to their BMI and kitchen work

Response	<25		=>25		Total	%
	F	%	F	%		
Yes	88	84.6	76	79.2	164	82
No	16	15.4	20	20.8	36	18
Total	104	100	96	100	200	100

Not significant

TABLE-8

Number of respondents according to their BMI and walk

Response	<25		=>25		Total	%
	F	%	F	%		
Yes	56	53.8	8	8.3	64	32
No	48	46.2	88	91.7	136	68
Total	104	100	96	100	200	100

Significant at 0.001

DF=1

TABLE-9

Number of respondents according to their BMI and Exercise

Response	<25		=>25		Total	%
	F	%	F	%		
Yes	36	34.6	4	4.2	40	20
No	68	65.4	92	95.8	160	80
Total	104	100	96	100	200	100

Significant at 0.005

DF=1

TABLE-10

Number of respondents according to their BMI and calorie conscious (c/c)

c/c	<25		=>25		Total	%
	F	%	F	%		
Not at all	20	19.2	40	41.7	60	30
To some extent	52	50	52	54	104	52
To great extent	32	37.8	4	44.3	36	18
Total	104	100	96	100	200	100

Significant at 0.05

DF=2

Discussion

According to their BMI 48 % of respondents in the study were over weight or obese. This prevalence of obesity is more as compared to United States but matched with prevalence of African-American women³. May be it is due to less awareness regarding caloric requirement, different nutrients and there caloric value and different taboos etc. Cultural factors may contribute to obesity in various ways.

In some parts of Africa and West Indies moderate obesity in women is desired by their men folk and admired by their sisters. Our culture is more or less similar⁷.

Table number 2 findings that obesity was more prevalent in the age group of 26-35 matched with the findings of Garrow JS that obesity is more prevalent in 26-35 years age group⁸. This age group is more actively involved in reproductive activity and after every child birth there is little increase in the weight

and usually after completion of family mothers try to reduce the weight.

According to their educational status 50% obese population belong to the group who had graduation or post graduation did not matched with the findings of Rissanen AM which showed that obesity was greatest in low educational level. If we look at the two components i.e. weight and economic status most of the respondents belonged to middle and upper social class matched with results of Garrow⁹ i.e. relatively affluent and organized parts of developing countries showed a rapidly increasing prevalence of obesity (table 4).

A weak association was also observed between the weight and meals per day (table 5). Majority of over weight in the study took three meals per day results matched with Febyry i.e. who ate only three times a day were more likely to be over weight who ate five to six times¹⁰. Table number 6 showed no association between eating habits and over weight. During kitchen work nibbling may be common but in my study results were not significant (table 7). It reflected that their may be some other reasons which lead to obesity like number of meals per day, physical activity prevalence of take of food by making herself/himself calorie conscious.

It has been found that there has been a significant relation between walk, physical activity and weight of an individual (table 8 and 9). More than 90% of respondents were not doing any type of physical activity to burn their calories. They were of the view that house hold work burn the calories in the same way as exercise. The results were matched with the study Rissanen AM, Heliovaara M, Knekt P, Reunanen A and Aromaa Fins. There has been a significant relationship on the basis of calorie consciousness. Data showed that majority of calorie conscious

individuals had their weight at recommended level.

Conclusion And Recommendations

In study population over weight and obese people are more which may reflect the general trend of weight gain in female population in Bahawalpur City. No doubt sample size was not very large and it is not wise to generalize the results. For a healthy life style where avoidance of junk food, ketchups, fried & baked food and sweets are restricted there is also advice of physical exercise and regular walk. So there is a great need of health education of the population for the control of their weight. Now it is time that they must become calorie conscious and encouraged to develop the habit of physical exercise for the prevention of so many non-communicable diseases.

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