

5/19

PAKISTAN JOURNAL OF HEALTH

Official Journal of College of Community Medicine, Lahore



PAKISTAN JOURNAL OF HEALTH

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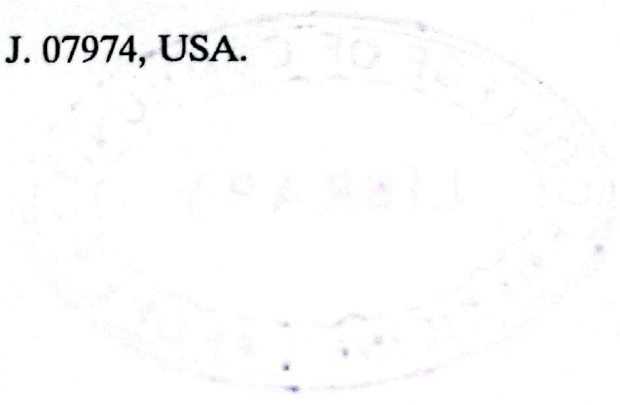
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6 - Birdwood Road, Off Jail Road, Lahore

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

1. **INDEX MEDICUS FOR WHO EASTERN MEDITERRANEAN REGION (IMEMR)**
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IDENTITY CRISIS OF PUBLIC HEALTH PERSONNEL

The identity crisis of public health personnel both in teaching departments of community medicine and in the health services is more than evident. The reasons are not far to seek. Firstly the public health programme are underfunded as compared to health care. Secondly public health continues to be difficult to sell, whereas health care continues to be demanded and better funded, Thirdly public health lacks the glamour associated either hospital, organ transplants, open heart surgery diagnosis and treatment and finally the lack of understanding of our political leaders who do not see public health programmes as cost-effective which will benefit large segments of the society rather than individual health care. At this point it is appropriate to consider the benefits of immunization programme which have saved millions of lives from infectious diseases. Yet another development that is taking place relates to environmental and nongovernmental agencies. Programme such as those mentioned in the foregoing paragraph together with the anticipated disasters of uncontrolled population growth as well as the current knowledge that AIDS can only be prevented has, no doubt, contributed to the prestige of public health departments. Having worked as a public health official both in health services and having thought community health for nearly fifty years, I have found that candidates from prestigious families are reluctant to choose public health as a career. Students in professional institutions generally consider the subject of community medicine as "unwanted".

In the college of physicians and surgeons where I examined fellows in community medicine for more than a decade, I found community Medicine remains at a low ebb. Having suffered frustration all along, it is my belief that the identity crisis of public health personnel can be minimized if not eliminated by:

- *Training medical undergraduate in family medicine.*
- *In-service training of clinical staff in public health so that they have an active role in primary health care.*
- *Continued efforts of public health departments for Intersectional Collaboration*
- *Priority attention to women's education and maternal and child health services.*
- *Checking uncontrolled population growth.*
- *Balancing of funding for public health and health care.*
- *The latter implies diagnostic and therapeutic interventions.*
- *Student involved in primary Health care.*

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DOCTORS, MANAGEMENT & TRAINING

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Summary

Effective management has a powerful role to play in ensuring the delivery of high quality health care in a wide range of different and changing health care institutions. The process of training medical personnel to undertake this function is complex and needs persistent evaluation to assess the impact of the training on the health care organization it is seeking to influence. This short article seeks to identify features of successful training programmes. It is based upon the experience of the authors of training approaches from a number of different countries.

Doctors in Pakistan as in most parts of the world enjoy high public esteem. As a highly skilled profession, accustomed to the empirical nature of scientific enquiry, the uncertainties of the behavioral and psychological studies supporting some aspects of management studies are not always readily accepted. Doctors are used to numbers and statistics, morbidity and mortality rates and can be impatient with the 'softer' and less technical management skills. However such skills are vital in managing in less formal and less institutionalized settings. The manager has to act as 'negotiator' and 'networker' stressing aspects of 'teamwork' and managing with-in the community and across professional boundaries. In such situations, attitudes and values and an appreciation of political dimensions is just as important as a knowledge of organizational structures and out put budgeting. Very often doctors receive little formal training in management until relatively later on in their careers when attitude have been firmly set and preconceived ideas dominate. Management is seen as administration and administrators as second class citizens, there only to service the needs of the medical community.

The very personal nature of the clinician's work in fighting for individual patients may make them hostile to the pseudo scientific approach of the health economist in his attempts to rationalize resource allocation procedures. Clinical excellence and individual patient satisfaction can

conflict with the more aggregated measures of community health and community need.

Despite the septicism shown by many doctors towards 'management' it is difficult to overstate the need for effective training in this area, especially in Pakistan where the acceptance of professional but non - medical, managers seems many years away. The traditional 'command and control' approach to management is less relevant, especially where good health care is becoming more and more integrated between health and the other agencies and between health care units at the different levels of provision. Where the divergence between demand and supply is so great, the situation demand greater attention to the management process, not less as seems to occur in the 'helplessness scenario' where problems are seen simply as inevitable and unsurmountable. In any event increasingly Aid organizations are demanding evidence of good management as conditional to further tranches of investment funds.

On the more positive side, helping doctors to acquire management skills can provide a catalyst for change and development. Highly articulate and effective doctors can be powerful stimulants for change in organizations, and as the numbers expand to a minimum critical mass, can acquire acceptance, and political power at an institutional level. A doctor taking on a management function with out the necessary formal training can be a very costly move. There is the opportunity cost

involved, in the loss of the use of clinical skills, and the potential damage that can be caused by poor leadership, especially in situations which permit considerable discretion and decision-making ability to those at the top of organizations.

The debate concerning the most appropriate means to enable doctors to acquire the necessary skills and knowledge will no doubt continue. Perhaps it is better to suggest that there is no magic way for this to be achieved, in the same way that there is no universal model answers to management, medical problems. For a manager, dealing with problems is an inherent part of his work, and the only certainty is that problems will continue to develop, to change and to present new challenges to all organizations. 'Model' answers to 'old' problem 'learnt' by students represents a considerable waste of time and effort; raising questions, identifying problems and helping to equip students to 'think' and suggest approaches and places to search for possible solutions, a much more valid method. There is always considerable pressure to come up with simple and quick answers, especially from the business world, but quick solutions when dealing with complex organizational issues and 'people' can so often come unstuck.

In term of philosophy, our experience supports a balanced approach between the knowledge and skills conundrum. Certain of our courses focused very heavily on knowledge, on theories, and less on the personal skills and development of our students. The extreme result was students well versed in ideas facts and theories but much less competent or confident in translating such knowledge into action 'they knew much, but could do little'. Over emphasis on the acquisition of skills - 'can do' - job descriptions, balance sheets, etc. - led to the criticism of a rather superficial product, students being 'able to do much' but not knowing why they were doing it' - and, more importantly lacking the understanding to change or do things differently if the situation changes. Clearly the curriculum must reflect the specific objectives and local situation. We are increasingly impressed by the emphasis placed by some institutions, on the development of higher level skills, and the question of values, qualities and attitudes. In developing countries where so much can depend upon the personality and

leadership of individuals, the vexed question of how such qualities can be developed is a vital one. There is increasing evidence from around the world that the features sustaining successful organizations cannot be equated with the technical or mechanical expertise of organizational charts or cash flow forecasts, but rely rather on the imprecise and cultural factors captured by such terms as 'teamwork' 'leadership' and 'vision'. (1) At a human level, if successful management is to include a visionary leadership role, personal qualities of integrity, trust and endeavor become important parts of a manager's management armory. There is evidence that the attitude of such leaders and their concern for their subordinates is a key factor in the self development of staff, and in allowing them to contribute towards organizational change. It may be that at an early stage, a knowledge of the importance and success of such factors can help a manager to develop such qualities. However a fundamental change in nature is unlikely in someone basically not interested in earning the respect of subordinates by their commitment to the organization.

Implicit in the nature of what has already been said, is the importance of the learning process, the self-development of the (management) students, rather than the teaching methods. The emphasis should be on the teacher as facilitator, helping the students to learn, rather than as the formal font of all knowledge. The relationship can be seen as a partnership, in an active and participative relationship similar to 'business' enterprises with flexible systems and organizations, where the focus is project orientated, and not dominated by hierarchies and authority. Sometimes we as teachers become obsessed by the interest and wisdom of our 'subjects', and forget our real objective in developing our students. Recognition of this simple fact, and that in a health care environment such 'managers' are likely to be asked to practice in situations far from hospitals, Where close help and supervision is less possible, and where the ability to work independently and yet with people is likely be vital. Where a degree of personal empowerment is seen as an objective of the process, a training environment which insists on high standards and high expectations is likely to see such expectations become self fulfilling. The

enthusiastic, almost inspirational facilitator can demand real efforts from students in a challenging environment.

Such conditions to create a learning environment have been well described (2) but such principles for adult learning can so often be overlooked, when time, resources and organization in training institutions are in short supply. It is vital to treat the student group as a real resource with expertise and experiences to be shared. A challenging environment, and one which provides feedback and encouragement, and allows individuals to be treated in a sympathetic and open manner is likely to encourage honest participation and ideas to flow. The stereotype of dictation teaching from 'the expert' has only a limited role to play.

It is not the purpose of this article to attempt any blueprint covering all situations, but some general comments from experience gained from numerous programmes and countries, might be helpful. A range of alternative 'teaching' methods and assessment procedures is available to focus on useful and practical situations. A programme linked to consultancy and project work at local hospitals and health centers can gain an enormous degree of credibility and help to overcome the remoteness and artificiality of more classroom-based methods. Backed up by a variety of case studies, project work, discussion seminars, lectures, and 'games', it should provide for a participative and stimulating approach to learning. An emphasis upon group work as well as the development of individual competencies will help to provide participants with confidence and team building skills so vital to managerial decision-making.

The ultimate test of the success of training is whether the participants actually put into practice their 'learning', when they return to their organizations. A knowledge of management theories and the ability to do cash flow forecasts is unlikely to have significant impact unless the individual and the organization have the willingness and the strength to change. The waste and frustration felt by 'trained' managers is immense, if faced by a defensive and non-receptive organizational situation. This issue should be addressed at a number of levels. In pure curriculum terms, the management of change has now become a standard feature of

most management programmes, and could well be assisted by a kind of practical biofeedback at the very end. Programmes which capture the less formal and more political skills of negotiation and network building can equip a person more effectively to tackle organizations resistant to change. We are persuaded by informal studies that the success of entrepreneurs seeking external sources of finance depends as much on the 'personality' factor of the would be borrower, as the quality of the business proposition.

At a more external level much depends upon the 'sponsoring' organizations and the attitude of the leaders people on courses. CORAT/Africa (3) cites evidence from more than one hundred and fifty courses, demonstrating that the impact of training has less to do with what was taught than the attitude of leadership towards their staff and towards their organization. The question then becomes how can the organizers of training programmes help to create the kinds of conditions in organizations in their own countries which enable new ideas and new approaches to flourish? How can they help to promote this virtuous circle where leaders of organization have a positive view of change, and actively encourage participants to practice new ideas?

The problem illustrates the need for training organizations to work hand in hand with the range of organization who provide the trainees; close consultancy work, the use of practising managers as contributors to the programme, student projects linked to the organizations, and 'company' mentors to assist trainees during and after the training process. These can all help in relating training to the work and needs of the sponsoring organizations. Collaboration between outside organizations and 'the college' could include advisory panels to monitor the relevance of academic developments to the local situation and using every opportunity to open up colleges to the outside world.

Management is still likely to be seen as an overrated function especially by doctors more used to working with administrators still preoccupied with serving the professional needs of the medical staff. In situations where the seemingly infinite demands face very limited resources, management becomes a more vital function in preventing waste and inefficiency. Sensitive, well planned and relevant management

training, can go some way towards equipping individuals to deal with a growing variety of health care situations in changing locations. Poor training can be costly in resource and opportunity cost terms, leaving able people frustrated and even more resistant to the potential of more extensive managerial policies. It is hoped this article will make some positive contribution to the debate.

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SOME SCIENTIFIC FACETS OF QURAN AND SUNNAH (OF THE PROPHET MUHAMMAD, Peace be Upon Him) IN THE FIELD OF MEDICINE

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Summary

This is the era of science and technology. Great advances have been made in this century in the field of medical science. The aim of this paper is to correlate these developments with the teachings of Quran and the Principals of healthy living laid down by the Prophet (PBUH). It is so remarkable to note that the sayings of the Prophet in the early seventh century (A. D.), like the principles of cleanliness, eating and drinking habits, urination, defecation, marital relations, the use of mistake (tooth brush), sleeping habits, the use of honey, fig and olive oil have been proved now by the medical science, to be best suited for health. An interesting correlation has been found between the verses of the Quran, the sayings of the Prophet (PBUH) and recent medical discoveries.

Introduction

The Holy Book Quran is the eternal and everlasting bases of Islam. It contains signs and verses which have been leading people of different ages and of different academic and intellectual background to believe in Islam. The Holy Quran, time and again, invites mankind to study in depth and ponder over the creations of Allah. Islam being an International and universal religion is a complete code of life. The Holy Quran from the very start has a claim that it covers every aspect of life and is full of wisdom. The Holy Book speaks, "We have neglected nothing in the Book"(1).

Living in the age of breath-taking scientific discoveries we are in the best position to unravel the scientific and miraculous contents of the revealed message particularly in the field of medicine.

Materials and Methods

The second hand data has been employed in this paper. The material of this paper depends mostly upon Quran, Hadith, statements of scholars and

recent medical literature. Keeping in view the time valued formula of cross verification of evidence, both the religious view and recent medical discoveries have been correlated.

Results

The data collected from the Holy Quran and the books of Hadith shows a strong correlation with the data provided by the recent medical research. The detail is given in the discussion as under.

Discussion

Since the Quran is our Holy Book and the divine source of knowledge regarding medicine, so first of all the scientific facets of the Holy Quran are discussed.

Almighty Allah says: "By the Fig and the Olive; By Mount Sinai and by this land which is made safe. Surely we created man of the best stature"(2). No doubt, the "Olive" is a very useful tree. Its name has been mentioned in most of the holy books like "Tourat" and "Injeel". This tree is found in Syria and its bordering countries as well as in

some other parts of the world. A renowned scholar Shabir Ahmad Uthmani states that since the trees of Olive and Fig have many advantages, they have something common with the biology of man. So the creator has mentioned the names of Man Fig and Olive together in the Quran(3). In this context, the Holy Prophet (PBUH) has said: "Use the Olive Oil in your meals and also use it for massage. For this Oil is obtained from a tree full of blessings"(4).

It is so remarkable that the Holy Prophet (PBUH) had stressed the use of Olive Oil and the recent medical research has proved that substitution of saturated fats with unsaturated fats lowers the serum cholesterol level, due to the direct cholesterol lowering effects of unsaturated fats(5). Other workers have also noted that unsaturated oil (including olive oil) has more beneficial potential than the saturated vegetable oil and butter fat(6). Furthermore, among the unsaturated edible oils, olive oil is more beneficial than corn oil as regards the serum lipid profile(7).

Considerable evidence has led to the suggestion that a diet high in Olive Oil, as is the case in Spain, is particularly beneficial with regard to increasing high density lipoprotein cholesterol (HDL) levels which is a protective agent against atherosclerosis and ischemic heart disease. Many workers have proved that increased intake of olive oil increased HDL level(8).

It is an established fact that HDL is an independent factor for coronary heart disease. It is a protective factor, raised level of HDL is beneficial for patients with coronary heart disease. The function of HDL is to pick up the cholesterol from periphery and to take it to the liver and to excrete it through bile(9). Recent studies have shown that olive oil produces least atherosclerotic lesions among the various unsaturated and saturated oils(10). Now a days olive oil is advised by the physicians in cases of stroke, hemiplegia and paraplegia.

As regards figs it is narrated that once a dish of figs was presented to the Holy Prophet (PBUH) as a gift. The prophet (PBUH) asked his companions to eat and added: "If I have to say, a meal has come from the heaven, I would say these are figs. The figs are effective for piles and are useful in gout"(11).

There are many factors which lead to the development of haemorrhoids (piles). Constipation is one of them. It has been proved by

pharmacologists that figs act as bulk purgatives and also contain mild irritant organic substances(12).

Compound syrup of figs is included in British pharmaceutical codex (BPC) and is very effective in constipation. Here it must be mentioned that the use of figs in gout or rheumatoid arthritis needs to be investigated.

The use of Mistake (tooth brush) is one of the sunnah of the Holy Prophet (PBUH). Abuhuraira states that the Holy Prophet (PBUH) has said "If it had not been difficult for my ummah, I would have asked them to use "Mistake" before every prayer"(13). The Prophet (PBUH) himself used "mistake" frequently and also before going to bed. As reported by Hazrat Aisha that whenever the Prophet (PBUH) entered the house, his first task was to use mistake (13). Allama Zubaidi Hanafi has quoted Ibni-Abbas telling ten advantages of Mistake from the health point of view. A few of them are strengthens the gums, cleans the mouth, acts as expectorant and keeps the teeth clean".

The dentists and gastro-enterologists agree that oral hygiene helps in the prevention of most of the diseases of oral cavity and gastro-intestinal tract (GIT). Recently a research was made in Cape Town S. Africa (vide Medicine digest, Asia, 1985) which reported that Mistake, contains large amount of tannic acid (Tannins). The Tannins prevent the adherence of the bacteria to the teeth. This helps in the prevention of carries teeth. It is an established fact that the Streptococcus viridans attacking the heart valves and damaging them come from the mouth. So the use of "Mistake" is a preventive measure against many disease of the teeth, G.I.T. and heart.

A companion of the Prophet (PBUH) Hazrat Anas states that the Holy Prophet (PBUH) had never, throughout his life, used a bread made from refined carbohydrates (14). He and his companions used to take the bread made from a flour containing husk and fibre. It has been proposed that with the modern development, man has progressively refined the carbohydrates in his diet over the centuries, so he has deprived himself of fibre, particularly from cereal and the resulting under filling of colon is an important cause of constipation, irritable bowel syndrome and diverticular disease. It has been found by researchers that African rural people have a daily dietary intake of over 250g carbohydrate and the pass stools weighing more than 250 g daily. So the

incidence of colonic disease is less than Western population whose daily diet may contain less than 20 g of fibre and whose stools weigh about 100 g daily. Adding fibre to the diet results in stools that are soft, bulkier and passed more easily and more often. It is thus a safe and natural way of treating constipation and in patients with diverticular disease, bran appears to reduce intra-colonic pressure waves.

Al-Bara bin Azeb narrates the Prophet (PBUH) as saying, "When you go to the bed at night, make ablution and then sleep on the right side" (15). For the stomach and heart both are situated on the left side of the body in thoracic and abdominal cavities; So if we sleep on the left side, there can be interference in the functions of stomach and heart, leading to various ailments. The statement, indeed, reflects a great wisdom.

The Holy Prophet (PBUH) used to wash hands before meals(16) and did not use towel or cloth for drying them. Because when the hands are washed, they are free from germs. If these are dried with a cloth or towel which is contaminated, this will lead to secondary contamination of food, resulting in food infection.

The Holy Prophet disliked overeating(17). In another hadith the Prophet has said "The man has not filled a bad pot than his abdomen. You should eat to the extent that you can keep your back straight. So you should divide the stomach into three parts i.e. one for the meal, the other for water and the last for air(17). Of course one of the risk factor for the wide spread disease diabetes mellitus is over eating. Over-eating leads to obesity. Studies in both animals and humans indicate that hypothalamic mediated satiety response in the obese may be delayed or weakened(18). Here, it is interesting to point out that initially the diabetic patients are controlled with diet restriction alone.

It is a sunnah of the Holy Prophet (PBUH) that during defecation, while sitting, pressure should be applied (to the descending sigmoid colon and rectum with) the left thigh(19). The physiologists have proved that this helps in the initiation of defecation reflexes through afferent signals that spread through the myenteric plexus to initiate peristaltic waves in the descending sigmoid colon and rectum forcing faeces towards the anus. This practice also helps in the prevention of constipation(20).

It is also a sunnah of the Holy Prophet (PBUH) that after urination the residual drops of urine are soaked into a piece of cloth and after defecation the whole area for defecation is washed with water(21). Using water for defecation and not using water, the bacteria which are the substrates of G.I.T. contaminate the perineal region and this is the cause of urinary and genital tract infections in females and males(21).

Again circumcision by the Muslims is a very important sunnah of the Holy Prophet (PBUH)(19). The material "smegma" which accumulates at the meeting point of glans penis and prepuce is considered to be a carcinogen. This is the reason that squamous carcinoma of penis is more common in those who do not have circumcision and is extremely rare among the Muslims in whom circumcision is performed early in childhood(23).

Hazrat Ibne-Umar reported the prophet (PBUH) as saying, "Fever is due to the vehemence of the heat of hell. So cool it with the cold water"(16). The clinicians, today, treat the cases of high grade fever with cold sponging in addition to antipyretic therapy(24).

The most deadly disease of the present day is AIDS. One of the major causes of this disease is perverted sexual practices, particularly multipartnership, homosexuality and prostitution. All these practices are strictly prohibited by Quran and Sunnah, thereby centuries ago providing a baseline guidance in Preventive Medicine for this communicable disease that has created a havoc in the world.

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IMPROVING THE HEALTH STATUS OF URBAN SQUATTERS -- INDICATORS AND STRATEGIES

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Summary

By the year 2000, 50% of the population of world will be residing in the urban areas. Among them 50% will be living in conditions of extreme poverty and deprivation; they are "the fourth world people", largely from Asia. Karachi, the largest city of Pakistan, is also facing the problems of rapid urbanization. Currently 50-60% of the population lives in overcrowded slums and urban squatter settlements (Katchi Abadis). The health status and quality of life as identified by high Infant Mortality Rates in those areas is deplorable. This paper attempts to identify the indicators of health status and to propose strategies to achieve them. Infant Mortality Rates (IMR), the prevalence of low birth weight and undernutrition are the basic health status indicators. Among them IMR is associated with the Socio-economic conditions of families, garbage disposal methods, breast feeding practices and immunization status of the infants, the "Supportive Indicators". This paper relates the indicators of health as adopted by the World Health Assembly in 1981 in the context of the urban squatters settlement of a developing country (HIGH U5MR COUNTRY) i.e. Pakistan. At the end, strategies for improving the health are suggested. A debate is also generated about the contribution of modern scientific medicine versus socio-economic factors, so as to guide the planners of urban squatter settlement using these different indicators in planning, monitoring and evaluating the programme.

Introduction

The level of global urbanization, defined as the proportion of the population living in urban areas, has increased from 29% in 1950 to 41% in 1985. At present 2 out of 5 persons in the world are urban residents. The proportion of the urban population is projected to exceed 50% sometime during the first decade of the twenty-first century. The level of urbanization in 1985 is considerably higher in the developed regions (72%) than in the developing regions (31%). However, urbanization is proceeding in the developing regions at a fast pace. For the period 1950-1985, the urban and rural populations in the developing regions grew at average annual rates of 3.95% and 1.68%, respectively. This has resulted in an increase in the proportion of the urban population from 17% in 1950 to 31% in 1985. The proportion is projected to reach 50% around 2025 (1).

These are the "fourth world" people meant to describe subproletariats whose housing, sanitation, clothing and food are inadequate. From the

economic point of view they are considered a burden and from the health point of view, a danger (2).

At the present time, an average of 50% of the urban population lives in conditions of extreme deprivation. Assuming that by the year 2000, one half of the urban population will still be living in similar conditions, at least one billion will be counted among the poor. Of these approximately 65% will live in Asia, 24% in Latin America and 20% in Africa (2).

According to the 1981 census of Pakistan, 28.3% of the population was residing in urban areas. The urban population of Pakistan has shown a four fold increase during 1981. More than half (53.4%) the urban population of the country currently resides in large cities of 0.5 million and above. The number of cities in this category has risen from 2 in 1951 to 8 in 1981. Pakistan appears to be over urbanized. In 1985, 30% of the population was urbanized and during the period 1973-84, the average annual growth rate of the

urban population was 4.4% (3). The expected level of urbanization of Pakistan based on the 1984 figure of GNP per capita (US\$ 380) would be about half the current level. According to a report from Assignment children (4), the population of Karachi in 1971 was about 3.428 millions with slum dwellers contributing 0.8 million (23% of the total city's population). In 1980 its population was about 5.0 million and by the year 2000, it is expected to be 11.6 million. Thus Karachi is one of the 60 cities in the world having a population above 5.0 million. In 1981, it accounted for 22% of the entire urban population (3) and 8% of the total population of Pakistan (5) currently about 40% (6) to 60% (5) of the people live in the overcrowded slums. The population of some of these slums varies from 0.8 million to 1.5 million (6).

The urbanization and its impact on health can be studied by the indicators presented in Table 1. These affect and are being affected by each other. Most of them have been adapted internationally to monitor and evaluate health status especially of children (3).

For planning, implementing and evaluating health services for squatter areas, it may not be possible to generate the data for all the indicators. This study aims to find out the prevalence of different socio-economic and health indicators in urban squatter settlements of Karachi and to estimate the association of these indicators with health status of urban squatter (especially of the children). At the end an attempt has been made to select the most important indicators of health so as to propose some strategies for ensuring good health status of urban squatters.

Materials & Methods

Two kinds of data were utilized to achieve the objective of this study. Both the studies area reported in detail, elsewhere. The studies were:

1. An inquiry into 318 families to find out the determinants of infant deaths in urban squatter settlement (12). This was a case-control study and data from five squatter areas were collected.
2. Socio-demographic and health surveys conducted through a private University in Karachi (13).

Results

Two categories of basic indicators of health for squatter areas have been presented.

They are:

I. Basic indicators of Health

A. Infant Mortality Rate

Infant mortality of the FIVE Urban Squatter Settlements (Katchi Abadis) of Karachi was 124.1/1000 Live Births (weighted mean). This figure is quite high in contrast to non-squatter city areas of Karachi 40-43/1000 Live Births, of the rural areas of Pakistan (101-116/1000 Live Births) and of Pakistan herself (111/1000 Live Births) (3, 7, 14, 15).

B. Under Five mortality Rates

The under five Mortality Rate was 175/1000 Live Births. Although 17.5% of all the babies born could not celebrate their fifth birthday, it is mainly the first year of life which is more important for the child's survival. Thus, supportive indicators (mentioned later on) have been drawn in relation to the first year of life.

C. Prevalence of low birth Weight

The exact figures for low birth weight were very difficult to establish when 66.4% of the mothers deliver at home. However the weight-for-age in the first month of infant's life has been taken as a proxy of Low Birth Weight (LBW) (11). One third 33.3% of the neonates were below the 3rd centile of weight/age for girls (16). The prevalence of LBW in Pakistan is about 27% (3).

D. Malnutrition

The percentage of infants below the normal standard curves (16) was 28.3% (n = 212). This may be misleading because it was calculated by a single measurement and no documentation of associated morbidity could be made, and the prevalence of malnutrition starts increasing only after six months.

II. Supportive Health Indicators

The basic health indicators affect the supportive indicators either in isolation or in combination in an interlocking manner. Besides, as they tend to affect and are being affected by each other, one should be cautious in labelling only one indicator as "THE MOST IMPORTANT". Some of the Supportive Indicators noted through the data were:

Table 1. Internationally Recommended Health Indicators

1. BASIC INDICATOR OF HEALTH	Infant mortality rate (IMR: number of deaths occurring to infant between birth and the exact age 1 year per 1000 live births (7,8). Also one of the most sensitive indicators of quality of life (9).
2. OTHER HEALTH INDICATORS	Under Five Mortality Rate. Percentage of infants fully immunized for age. Percentage of pregnant women who receive tetanus vaccination. Percentage of births attended by trained health personnel. Percentage of the population having access to drinking water.
3. NUTRITION INDICATORS	Percentage of mothers breast-feeding Percentage of infants with low Birth Weight. Percentage of children under five suffering from malnutrition.
4. DEMOGRAPHIC INDICATORS	Crude Birth Rate. Crude Death Rate. Population Growth Rate.
5. EDUCATION INDICATORS	Adult literacy rate. No. of radio receivers per 1000 population.
6. ECONOMIC INDICATORS	Average monthly income. Economic status based on household facilities and conditions (11).
7. ENVIRONMENTAL SANITATION INDICATORS	Garbage disposal methods. Toilet facilities. Cooking facilities.

Source: (Ref. 3). The state of The World's Children 1987. Eds. Grant James P. UNICEF. Oxford University Press, 1987.

Table 2. Relative Risk and Attributable Risks to Infant's Death by the Different Indicator having Bad Exposures

Factors /Variables Exposed Negatively / Positively		Risks To Infants' death	
		Relative	Attributable
1. Medium & Low High Socio Economic Scores	High Socio-Economic Scores	3.0	48%*
2. Toilet shared with other families	Toilet not shared with other families	1.9	13%
3. No separate cooking room	Separate cooking room present	1.9	12%
4. Garbage disposed off in ground.	Sweeper comes to collect it.	3.3	44%*
5. No Tetanus Vacc.	Tetanus Vaccination.	1.3	25%
6. No breast feeding	Still breast feeding	16.	31%
7. Immunization not done at all	Immunization appropriate for age 11.7		68%*

* Having Relative Risk more than 2.0 and a high attributable risk.

A. Health Related Indicators

- Percentage of infants fully immunized for age : 66.3%
- Percentage of pregnant women who received tetanus vaccination : 52.8%.

The immunization status of the studied mothers and children is relatively high because of a surveillance system in these areas, so no generalization should be made from these results.

- Percentage of births attended by trained health personnel:

NURSE / DOCTOR	32%
TRADITIONAL BIRTH ATTENDANTS	26%

Interestingly 55.7% of mothers had visited hospitals for ante-natal check-ups, but only 33.3 % of the mothers delivered in hospital.

- Percentage of the population having access to drinking water. Although 100% of the families residing in Katchi Abadis had some access to drinking water only 38.4% had a tap inside their homes. The community tap which is the commonest (51.9%) source of water is likely to be (a) breeding place for many pathogens. One should keep in mind not only the availability but also the quality of water being used by the people.

B. Nutrition Indicators:

- Percentage of Mothers Breast-feeding their infants: 92%

The exact pattern of breast feeding infants was :

- Still feeding : 56%
- Breast feeding mixed with artificial milk: 32.1%
- Breast feeding for few months (mean = 4.4 months) : 11.9%

(The nutrition indicators for mothers and adults have not been mentioned because they are difficult to calculate and document)

C. Demographic Indicators:

- Crude Birth Rate: 42.5 / 1000 population.
- Crude Death Rate: 13.5 / 1000 population.
- Percentage of population under 16 / 5 years of age : 50.4 / 21.2.

The population pyramid of these Katchi Abadis looks like a triangle with a broad base and pointed top, indicating a relatively young population residing in these areas :

D. Education Indicator

Adult literacy rate:

The percentage of the population age 10 + (including the school going children) varies from 64-74 % of the population. But the literacy rate of the parents is only 26.1% (father & mother = 54.6% / 29.4%). No. of radio receiver per 1000 population : 68 / 1000 population.

E. Economic Indicators.

Average monthly income:

Mean: Rs 1439.5 (standard deviation :83%) or & 50 (\$ 90). Economic status based on household facilities and condition. (11):

Low:	13.8 %
Medium:	38.7 %
High:	47.5 %

F. Environmental Sanitation indicators .:

Garbage disposal method:

Sweeper comes to collect it : 37.8 %.

Thrown outside the House : 32.5 %.

Thrown out in the Ground : 29.7 %.

Toilet Facilities:

Flush privy : 14.5 %.

Privy Without Flush : 80.8 %.

Bucket Latrines : 2.8 %.

Others (closed pipes or open space) : 1.9 %.

COOKING FACILITIES

81.4 % of the house hold had a separate room for cooking purpose. All the above environmental indicators not only indicate the sanitary condition in and around the household but they also point to the relative socioeconomic condition of the families.

Based on the above indicators identified, selective indicators (both BASIC and SUPPORTIVE) have been isolated.

The important BASIC indicators that can be utilized in context of urban squatters are.

- Infant Mortally Rate. (for health status and quality of life).
- Prevalence of Low Birth Weight (indicating nutritional status of mothers and the care provided during pregnancy).
- Prevalence of Malnutrition (indicating the dietary practices, food availability and distribution among family members and the effects of morbidity on nutritional status).

The important SUPPORTIVE INDICATORS have been selected by associating it with the IMR, which is a good indicator of the quality of life (Table II). Relative and Attributable Risks have been calculated for those variables which had a highly significant statistical association (Chi-Square P value < 0.05) with infant's health status. The odds ratio has only been applied for the variables having POSITIVE AND NEGATIVE exposures on infant's status (17). Thus the important SUPPORTIVE INDICATORS having higher attributability to infant death (the quality of life) are:

- a. Immunization status.
- b. Socio-economic condition.
- c. Garbage disposal methods.
- d. Breast feeding practices.

Discussion

A family in urban squatter settlements (katchi abadis) comprising nine members with limited income and resources, is exposed to all health hazards. The morbidity pattern varies from Respiratory infections and Diarrheal illnesses on the one hand to Hypertension, Cardiovascular Diseases and Diabetes on the other. (13) Although the main victims of the hostile socio-biological and environmental factors are children (under five year of age) and mother, no age is excepted. Thus the health of an infant is as important as adult who is the sole earning member of the family; his health and well being can affect the health and survival chances of other family members.

IMR, the sensitive indicator of quality of life and health status is affected by many indicators of the status of urban squatter. Higher relative risks and attributable risks to IMR has been seen with low socioeconomic conditions and an insanitary environment. Some of the important indicators for the status of the urban squatters should be taken into account when any programmes are either implemented or evaluated. Failure to appreciate the associate of the different indicators with each other in isolation or in combination often results in vertical programme for the upliftment of the "fourth world" people. The health of the dwellers of katchi abadis is also part of the overall status of the katchi abadis; any programmes/project related to health or other aspects of development will have either a direct or an indirect impact on their health. Thus the struggle for health can not succeed until and unless the indicators identified do not improve favorably (18).

Health is not primarily a matter of medical systems but rather a broad question of better understanding of the nature of under development itself (19). From the point of view of understanding how and by how much development can influence mortality (proxy of health status), it can most appropriately be seen as an interrelated set of social and economic changes, among which are significant change in mortality and fertility. As progressively higher levels of development are reached, changes in the availability of resources and the structure of their use interact with one another in ways that influences and are influenced by alterations in mortality levels. One of the overall results of this complex process is, as is well known, mortality decline (20). Besides the pace, the pattern of development is also important. Since the poor tend to spend a much greater proportion of any increase in income on such health related basic necessities as food, housing and medicines than do the rich, it would seem reasonable that a more equitable pattern of distribution of money and social justice in society would contribute favourably towards health improvement. Among the more specific areas of social change receiving the greatest attention has been education, particularly female education (21). But one might question how reasonable it is to expect a developing country government to accord a genuinely high priority to education in order to improve health status unless it is committed to other more basic measures such as land reforms, legislation of illegal occupation of lands and overall income distribution, that benefit the poor.

Considering health as mainly a matter of medical systems, targeted approaches and technologies can improve health (22). Currently there is an unresolving debate between Selective and comprehensive care and the concepts, policies and practical implications of their approaches. Who controls the outcome of technological interventions and the perceived time frame in which plans can be carried out (23)? The approaches can be problem oriented rather than technology-oriented or disease-oriented (24). Be it a selective (25, 26), comprehensive (23, 27, 28) or categorical programme for primary health care, it should be kept in mind that "Health For All by the year 2000" (HFA/2000) strategy does not purport to attain by the turn of this century a state where diseases and ill-health have disappeared from the globe and all people enjoy immortality (29). It has to be viewed as a clarion call to governments and populations alike to work ceaselessly for a

diminution in ill health status and improved health care among as well as within countries.

In order to monitor and evaluate progress towards HFA/2000 strategy's goal, the World Health Assembly approved in 1981, four categories of global indicators:

- a. Health Policy Indicators.
- b. Social and Economic Indicators.
- c. Indicators of Provision of Health Care.
- d. Indicators of Health Status and Quality of Life.

This paper has attempted to relate most of these indicators in the context of the urban squatter settlements of a developing country (HIGH U5MR COUNTRY), Pakistan. It is not to resolve the debate of the contribution of modern scientific medicine versus socio-economic factors (30,31,32,33), but it is to guide the planners of urban squatter settlements when looking at the importance of different indicators in planning, monitoring and evaluating the programmes in these areas.

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MANAGEMENT OF ACUTE WATERY DIARRHOEA IN CHILDREN BELOW 5 YEARS -- REPORTED PRACTICES BY GENERAL PHYSICIANS OF LAHORE - PAKISTAN

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Summary

Two hundred and sixty-two randomly sampled general physicians of Lahore were interviewed to study the current practices and factors affecting the management of acute watery diarrhoea in children below 5 years of age in comparison with the World Health Organization (WHO) guidelines. Among the physicians, 19.1% said they would prescribe ORS alone, 60.7% ORS with some drug, 14.9% drugs alone, and 5.3% increased fluids only.

Physicians in government sector as compared to private sector, physicians trained in a paediatrics unit as compared to not trained in a paediatrics unit, and recent graduates as compared to older graduates reported they prescribe more in accordance with the WHO guidelines ($p < 0.05$). No statistically significant relationship was found between reported prescribing according to WHO guidelines and attending a diarrhoea training unit (DTU) course, reading WHO guidelines for management of diarrhoea, and total number of patients seen daily. Physicians were more likely to report that they prescribed according to WHO guidelines if they believed that mothers were satisfied with ORS. Two hundred fifty-five (97.3%) physicians thought that majority of other physicians prescribed drugs for the management of acute watery diarrhoea. The most commonly cited reasons were because they want to satisfy the mother of the children and physician's belief in the effectiveness of drugs and competition in practice.

Introduction

In Pakistan, there are estimated 54 million episodes of diarrhoea yearly causing some 300,000 deaths of children below 5 years of age [1]. Reduction in mortality and morbidity can be achieved by better preventive measures and proper management of cases during early phases of illness [2].

In the past, management of diarrhoea was based primarily on intravenous (IV) fluid therapy, initial bewail rest, gradual reintroduction of foods, and use of antibiotics and anti-diarrhoeal drugs. Recent studies have shown that diarrhoea cases can be effectively managed without intravenous rehydration, antibiotics or antidiarrhoeals, based on four elements, as recommended by WHO: replacement of fluids by oral rehydration salt

(ORS) solution, continued feeding, avoidance of drugs for acute watery diarrhoea (AWD) and effective instruction of the child's mother or other caretaker in management and danger signs [2].

To get the benefit of these recommendations, it is imperative that the majority of physicians practice according to these recommendations. A number of intervention studies have shown that once a practitioner has made a decision to use a drug, it can be difficult to incorporate new information and to modify his/her choice of therapy [3-6]. Resistance to change the practising behaviour of physician who are using the older method of management of diarrhea may be due to their own beliefs and/or their perception of mothers expectation of therapy.

In recent years a number of studies have been conducted in developing countries to describe the

current practices of physicians regarding management of diarrhea in children and to measure the effect to different strategies and programmes used to change their practice. Descriptive studies have shown that the use of ORS has increased but the use of antibiotics and anti-diarrhoeal drugs remains high [7 - 9].

Many drugs in current use, including ORS, did not exist when today's practicing doctors were students. In the absence of compulsory postgraduate education, the only sources of information on drugs for many doctors are other physicians or advertisements by pharmaceutical companies. The purpose of advertising pharmaceutical is precisely to affect doctor's prescribing habits and to convince them to prescribe as many profitable preparations as possible [10]. Thus ORT has to compete with the multimillion-dollar propaganda campaign of pharmaceutical companies interested in high-cost drugs, whether effective or essential. However, physician appear to respond to the quality of care issue more readily than to the cost issue [11 - 13]. Therefore, promoting the cost effectiveness of ORT may be less effective in changing prescribing behaviour, as compared to promoting the efficacy of ORT in management of diarrhoea.

In Pakistan special guidelines for the management of diarrhoea were prepared in 1988 and disseminated to physicians for information and implementation [14]. Since March 1989, a special one week training course for management of diarrhoea has been offered on a regular basis by the government of Pakistan in 10 diarrhoea training units (DTUS). During 1989 - 1991 approximately 10,000 physician, mainly from the government sector, participated in this training. General physician in the private sector have not been extensively trained through this mechanism although they might have participated in a workshop on diarrhoea management or obtained information from DTU-trained physician or through journals and newsletters.

This study was conducted during 1992 to determine physician reported practices regarding childhood diarrhoea and to identify some of the factors that might be affecting this behaviour.

Materials & Methods

Study Area And Study Population

Lahore is a metropolitan city with a population of over 6 million. A list was prepared of all physicians of Lahore who treat children and who do not possess a postgraduate paediatric qualification. For physicians in public sector lists were compiled with the help of Health Department of Government of Punjab and Metropolitan Corporation Lahore. For private sector, final list was prepared from the lists provided by Wellcome pharmaceuticals and Pakistan Medical Association, Lahore branch. The list included 1,067 private and 190 government physicians, totalling to 1,257.

Sample size was calculated with the help of computer programme EPI Info 5. In the absence of availability of studies with comparable data Expected frequency is presumed to be 50%. Taking worst accepted as 45% at a confidence limit of 90%, sample size estimated was 223. To give an approximate 15% margin for non-response etc. a total of 262 physician's (223 private and 39 government) were drawn from the list with the help of a random number table.

Data Collection

All the physicians sampled were contacted for an appointment for interview according to their convenience. Only one physician refused to give such an appointment and was replaced by the nearest physician.

The 262 physicians were interviewed at their place of work by a team of three physicians with the help of a pretested, semistructured questionnaire consisting of 32 questions. The interviewing physicians had been trained by the principal investigator. During the interview, which took between 15-45 minutes, the physicians were asked whether they would prescribe ORS and/or drugs for a child under 5 years with AWD without dehydration and with no history of blood or mucous in stool. The physician factors recorded included internal predictors such as year of medical graduation, experience in children, training at a DTU or other workshop, reading WHO guidelines on management of diarrhoea; and external predictors such as place of work, perceived satisfaction of mother with prescription

of drugs or with ORS alone, children's response to ORS and number of patients seen daily.

Analysis

The results were analyzed to study the relationship between the factors studied and the current reported practices of the physicians regarding the prescription of ORS and drugs. Significance was tested by chi-square without continuity correction.

Results

Characteristics of Physicians

As shown in table 1, of the 262 physicians who participated in the study 39 (14.9%) were from the government sector and 223 (85.1%) were from the private sector. An overwhelming majority of the physicians were male (85.5%) and had 5 years or more experience in the management of children with medical problems (78.0%). 34.0% of the physicians had previously worked in a paediatric unit. Although 48.5% of the physicians had read the WHO guidelines for the management of AWD, only 17.6% had attended a special DTU course and 11.8% had attended some workshop on diarrhoea management. The majority (78.6%) of the physicians examined 20 or more patients per day during their duty/practice hours; similarly, 78.2% saw 10 or more children below 5 years per day.

Table 1: Characteristics of Physicians who Participated in study (N = 262)

Characteristics	No.	%
Practice Site		
Government	39	14.9
Private	223	85.1
Sex		
Male	224	85.5
Female	38	14.5
Year of Graduation		
Before 1975	84	32.1
1975 - 1979	27	10.3
1980 - 1984	73	27.9
1985 - 1989	57	21.8
1990 and later	21	8.0

Experience in child care	76	29.0
0 - 4 years	68	25.9
5 - 9 years	35	13.4
10 - 14 years	17	6.5
15 - 19 years	66	25.2
20 years and above		

Training in Diarrhoea Management		
Experience of working in Paediatric unit	89	34.0
Attended DTU course	46	17.6
Attended workshop on Diarrhoea Management	31	11.8
Read WHO Guidelines on Management of Diarrhoea	127	48.5

No. of patients seen daily		
00 - 19	56	21.4
20 - 39	66	25.2
40 - 59	52	19.8
60 - 79	38	14.5
80 +	50	19.1

No. of Children below 5 years seen daily		
00 - 09	57	21.8
10 - 19	67	25.6
20 - 29	52	19.8
30 - 39	35	13.4
40 +	51	19.4

Do Physicians Prescribe According To WHO Guidelines?

When the physicians were asked about their own practice in relation to the WHO guidelines, only 50 (19.1%) responded that they would prescribe ORS alone, 159 (60.7%) said they would prescribe ORS with drugs, 39 (14.9%) said they would prescribe drugs alone, and 14 (5.3%) said they would advise only increased fluids for the management of AWD without dehydration, and fever, or blood or mucous in stool in children below 5 years of age. (table 2).

Overall, 209 (79.8%) of the physicians responded that they would prescribe ORS for the management of AWD, either alone or with drugs. One hundred ninety-eight (75.6%) of the physicians said that they would prescribe drugs, either alone or with ORS, for the management of AWD.

Table 2: Frequency Distribution of Physicians according to the prescription behaviour for management of acute watery diarrhoea in children below 5 years
(N = 262)

Prescription	No.	%
ORS ALONE	50	(19.1)
ORS + DRUGS	159	(60.7)
DRUGS ALONE	39	(14.9)
NO ORS, NO DRUGS	14	(5.3)
ADVISE ONLY INCREASED FLUIDS		
A. ORS, with or without drugs		
B. Drugs, with or without ORS		

Factors Affecting Reported Practice:

Physicians were more likely to report their behaviour conformed to WHO guidelines for prescription of ORS and drugs if they were in the government sector rather than the private sector. Nearly 44% of physicians in government practice use ORS alone compared to 14.8% of physicians

in private practice ($p < 0.05$). In addition, physicians who had been trained in a paediatric unit or graduated recently were also more likely to report use of ORS without drug ($P < 0.05$).

However, no statistically significant difference was found in the reported practices of physicians who had attended the DTU course or not or who had read the WHO guidelines for the management of diarrhoea or not. Again no statistically significant association was found between the number of patients seen daily by a physician and the current reported practices of the physician regarding management of AWD.

Physician who believed that mothers are completely satisfied with the prescription of ORS alone to their children suffering from AWD reported prescribing more ORS and fewer drugs as compared to those who did not believe so ($p < 0.05$). However no relation was found between a physician reported practice and his or her belief about children's response to ORS. As shown in table 3, 71 (27.4%) physician believe that the majority of children like ORS; 147 (56.8%) physicians believe that the majority of children dislike ORS but take it; and only 41 (15.8%) of physicians thought that the majority of children refuse to take ORS. But this belief showed no relationship with the reported practices of physicians.

Table 3: Reported practices of physicians in relation to the factors studied
(N = 262)

	Reported practice				
	Number of Obs	ORS alone Number (%)	ORS + Drugs Number (%)	Drugs alone Number (%)	No ORS No Drug Number (%)
Practice Site*					
Government	39	17 (43.6)	15 (38.5)	1 (2.6)	6 (15.4)
Private	223	33 (14.8)	144 (64.6)	38 (17.0)	8 (3.6)
Years since graduation*					
Before 1975	84	10 (11.9)	52 (61.9)	17 (20.2)	5 (6.0)
1975 - 1979	27	6 (22.2)	16 (59.3)	5 (18.5)	0 (0.0)
1980 - 1984	73	10 (13.7)	53 (72.6)	8 (11.0)	2 (2.7)
1985 - 1989	57	16 (28.1)	30 (52.6)	8 (14.0)	3 (5.3)
After 1990	21	8 (38.1)	8 (38.1)	1 (4.8)	4 (19.0)

No. of Patients seen daily					
00 - 19	56	14 (25.0)	33 (58.9)	6 (10.7)	3 (5.4)
20 - 39	66	11 (16.7)	44 (66.7)	7 (10.6)	4 (6.1)
40 - 59	52	9 (17.3)	31 (59.6)	9 (17.3)	3 (5.8)
60 - 79	38	9 (23.7)	21 (55.3)	6 (15.8)	2 (5.3)
80 - 99	50	7 (14.0)	30 (60.0)	11 (22.0)	2 (5.3)
Experience of Working *					
In Pakistan and					
04	89	29 (32.6)	45 (50.6)	8 (9.0)	7 (7.9)
Spent working	173	21 (21.1)	114 (65.9)	31 (17.9)	7 (4.0)
Attended DTC course					
Attended	46	13 (28.3)	26 (56.5)	4 (8.7)	3 (6.5)
Not attended	216	37 (17.1)	133 (61.6)	35 (16.2)	11 (5.1)
Read WHO guideline on Management of Diarrhoea					
Read	127	28 (20.0)	78 (61.4)	12 (9.4)	9 (7.1)
Did not read	135	22 (16.3)	81 (60.0)	27 (20.0)	5 (3.7)
PHYSICIANS BELIEF REGARDING:					
Mother's response to ORS alone *					
Completely satisfied	27	17 (63.0)	6 (22.2)	0 (0.0)	4 (14.8)
Somewhat satisfied	46	5 (32.6)	20 (47.8)	7 (15.2)	2 (4.3)
Not satisfied	166	8 (10.8)	14 (68.7)	26 (15.7)	8 (4.8)
Child's Response to ORS					
Like ORS	71	15 (21.1)	45 (63.4)	7 (9.9)	4 (5.6)
Dislike but take it	147	26 (17.7)	93 (63.3)	21 (14.3)	7 (4.8)
Refuse to take it	41	9 (22.0)	19 (46.3)	10 (24.4)	3 (7.3)

* $p < 0.05$

Two hundred fifty five (97.3%) of the total physicians thought that the majority of other physicians prescribed drugs for the management of AWD. When the physician were asked why the other did so, number of reasons were given (table 4) the most commonly reason were to satisfy the mother/caretaker of the child, the physician's belief in the effectiveness of drugs and competition in practice.

Discussion

The results indicate that the majority (79.8%) of the physicians reported that they would prescribe ORS to children suffering from AWD but only a minority (19.1%) would prescribe ORS alone for the management of AWD in children without dehydrating, no fever and no blood or mucous in stool. This finding is consistent with information from other developing countries

showing that the prescription of ORS has increased in the past decade but use of drugs remain high {3, 4}.

Table 4: Frequency Distribution of Physicians according to the reasons given by them for the prescription of drugs by other physicians (N = 225)

Reason	No. ^a	%
To satisfy mothers	145	56.9
Believe in effectiveness of drugs	144	56.5
Competition in practice	80	31.4
Cause of diarrhoea not clear	56	22.0
Shortage of time to describe ORS preparation and use	19	7.5
Do not believe in ORS effectiveness	17	6.7
Others ^b	5	2.0

(a) Number of responses given by each physicians varied from 0 to 5, so the total number of responses is 466 from 255.

(b) Others - include those who refuse to respond (3), defective teaching (1) and complication of drugs (1).

Why do physicians fail to follow the WHO recommendations about drug use in AWD, even though the majority stated that they are aware of these recommendations. This study shows that the physicians who had graduated recently and therefore are more likely to have been exposed to the new concepts of management of AWD reported prescribing more in accordance with the WHO guidelines. Similarly, physicians who had experience of working in a paediatric unit also more commonly said they followed these

guidelines. It was disappointing that a at one week special training short course at the DTU or reading WHO guidelines had no apparent impact on the reported practices of the physicians. This suggests that medical school and postgraduate training in paediatrics are the critical determinants of practice.

Are the other factors in the physician's working environment that may modify their reported practices, independent of their stated knowledge/belief? First of all, physicians in the government sector reported that they prescribe more in accordance with the WHO recommendations than those in the private sector. This has also been found in a study in Indonesia, suggesting that physicians in government sector are less affected by their perception of mother's expectations about prescribing drugs for AWD and more influenced by current concepts of the use of ORS for the management of AWD {8}. This may be because their income is not directly associated with number of patients seen. This reported practice is reinforced when the physicians believe that the majority of the mothers can be satisfied with ORS alone, without drugs. this reinforcement is consistent with physicians reported desire "to" satisfy the mothers" in their prescribing of therapy for the management of AWD. Perception of children preference had no effect on reported use of ORS. This suggests that education of mothers about the value of ORS alone for AWD can influence physicians practice.

Two other issue appear to adversely affect reported practice, first is belief in the efficacy of drugs, and second a belief that other physicians give and that it is necessary to do as the "competition" goes. These represent another target concept for education programmes. The failure of DTU training to influence reported practice suggest that the second may be a more "potent" message.

Conclusion and Recommendations

Although it seems that the information to use ORS and no drugs in the management of AWD in children has reached the majority of the physicians, this information is not affecting the reported practices as expected.

The answer to this problem does not lie in short duration intensive courses like DTU

training course, but modification of knowledge preferably at an earlier stage. The teaching in medical schools should be modified in such a way as to incorporate the latest standardized management of diarrhoea and other problems of public health importance. If possible, a regular training in a paediatric unit may be made compulsory for the physicians going in to general practice, as the majority of their patient are children.

To modify the environment of physicians, the demand for drugs by the patients can effectively be reduced by using a strong health education programme to impart knowledge to the mothers/caretakers of children that use of drugs in the management of AWD can be dangerous for their children. The private practice may be organized in such a way, through the insurance system, that physicians are not directly dependent on the will of patients for their income.

Acknowledgement

We would like to thank DR. Humaira Mubasher, Dr. Sahibzada Azhar Mujid, And Dr. Tajmmal Hussain Mir for their help in conducting the study. We would also like to acknowledge the help provided by ADDR staff including Dr. Richard Cash, DR. Jim Trostle, Dr Karen Peterson, and Dr. Fitzroy Henry. We specially acknowledge the support and help provided by Mr. Jonathon Simon throughout the study, without which this study would not have materialized. We also want to acknowledge the support provided by the principle and administrative staff of Allama Iqbal Medical College, Lahore.

Financial support for this research was provided in part by Harvard University by mean of a Co-operative Agreement with the U. S. Agency for International Development.

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ASSESSMENT OF KNOWLEDGE OF ACUTE RESPIRATORY INFECTION AMONG POSTGRADUATE MEDICAL STUDENTS AT COLLEGE OF COMMUNITY MEDICINE, LAHORE

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Summary

Administered open - ended interviews were conducted with 25 diploma students at College of Community Medicine Lahore. The aim of this research was to discern levels of knowledge about WHO guidelines for management of ARI in children. The study revealed that students had very poor levels of knowledge about the new method of management of ARI. Since the new method promoted by the WHO and the national ARI Control Program of Pakistan are known to reduce morbidity and mortality amongst children suffering from ARI, the conclusion of this study is that further research and training needs to be undertaken.

Introduction

Acute respiratory infection (ARI) remains one of the major causes of infant and child morbidity and mortality in Pakistan. Conservative estimates suggest that each year approximately 12% of child death can be attributed to ARI, making it the third largest killer of children in Pakistan after diarrhoeal disease and neonatal tetanus (1). In 1989 the Pakistan Ministry of Health in collaboration with the World Health Organization, UNICEF, USAID launched a national ARI Control Programme. One aim of this programme was to introduce standardised case management of ARI amongst doctors and health workers.

Many physicians are still using what might be termed old methods of case management for ARI, which involves taking a history, auscultation, X - ray and laboratory investigations and multiple drug therapy. There are a number of problems with such method: auscultation is not a very sensitive sign for diagnosis of pneumonia, much of the laboratory work and many of the X - ray are costly and unnecessary. In addition, antibiotics tend to be inappropriately and over - prescribed, which has led to drug resistance in some children in Pakistan(2). World Health Organization

guidelines for management of ARI propose a new and simplified method of management which should supercede the old approach. This protocol constitutes five simple question about the history of the Child's illness, observation of respiratory rate and chest indrawing, long with conservative use of antibiotic if appropriate for the old method.

The Strategy for case management is based on evidence that most pneumonia deaths are due to two bacteria, *Streptococcus pneumonia* and *Haemophilus influenzae*, which are easily treated with a single, inexpensive antibiotic. The first drug recommended in the new approach for management of ARI in the outpatient management of children with pneumonia is cotrimoxazole. Research in Pakistan has demonstrated that the vast majority of cases of pneumonia in children give a satisfactory clinical response to oral cotrimoxazole, which is inexpensive and has a convenient twice - daily dosage schedule(2). Research in developing countries, including Pakistan, has already demonstrated that such management can bring about a 20% decrease in infant mortality and 25% decrease in child mortality (3). The method is less time consuming, does not require many resources

or use of technology and importantly can be used by community and villages health workers easily.

Despite the clear advantages of the method recommended by WHO for ARI case management, there is evidence to suggest that many physicians in Pakistan are still using the out-dated methods and that community health workers are not yet comprehensively trained in what can be a lifesaving technique. Researchers at the focal point for the National ARI Control Programme, Children's Hospital, Pakistan Institute of Medical sciences in Islamabad, have found that physicians have poor knowledge of ARI generally and have no standardized management protocol (4). This means that an excellent opportunity for improved practices leading to reductions in morbidity and mortality may be lost through lack of information or training.

This study will determine levels of knowledge about ARI case management amongst students of the Diploma in Public Health at Collage of Community Medicine Lahore. After Post-graduation from CCM, these doctors will take positions of responsibility as D. H. O, M. S. or Director Health etc since they hail from all the four provinces in Pakistan, their levels of knowledge and training in information about management of ARI is very important. The Collage of Community Medicine, Lahore is the central place for training these health personnel and can influence health workers of all types working with and under them.

Methodology

The universe of this study are all students of Diploma in Public Health/Diploma in Maternal and Child Health at Collage of Community Medicine, Lahore. Out of a total of 31 students (25 DPH and 6 DMCH) and 25 were interviewed: 19 were male and 6 female. The research design was an administered open-ended questionnaire designed to collect information about knowledge in relation to ARI protocol. Prior to administering the questionnaire to the study sample, a pilot test was undertaken: two students of the DPH were interviewed and subsequently excluded from the final study sample. The results of the study were analysed statistically and thematically.

Result

The age range of those interviewed was 26 - 51, with a median average age of 40 years. All the respondents were qualified with MBBS from various medical colleges with - in Pakistan. Prior to attending Collage of Community Medicine, 88% had the designation of Medical officers, whilst 12% were demonstrators in medical Colleges. The doctors had graduated between 3 - 20 year ago with a median average of 14 years since graduation. When asked if they had received any training on the management of ARI, 92% responded that they had not. Only two respondents had received specific training: one female respondent had the training at the National Institute of Health in Islamabad and another male respondent had received training at Postgraduate Medical Institute, Lahore.

Respondent were asked to describe the step-by step procedure to be followed for diagnosis when presented with a suspected case of ARI in a child. In describing their procedures the researchers were able to discern whether or not they were using the old or new methods for diagnosis. Twenty four (96%) of the respondents were using the old methods. Only the respondent trained at NIH, Islamabad described the methods recommended by the WHO. Similarly respondents were asked to describe the treatment that they would give if a case of pneumonia was diagnosed in a child. Ninety two per cent were following the old method, whilst only 8% (2 respondents) were following new method.

Respondents were asked to list the drugs that they would most commonly prescribe for a case of childhood pneumonia. The most common responses were as follows: 52% responded by answering penicillin with - out giving further detail 36% answered that they would give septran 16% responded by naming Amoxicillin and 16% listed other drugs such as Amoxil and Velosef (The total percentage adding up to more than one hundred because of multiple answers from some respondents). As research has demonstrated, most pneumonia deaths are caused by two bacteria streptococcus pneumonia and Haemophilus influenzae (3) of the twenty five respondents interviewed only 8% could name both bacteria correctly 84% could correctly name

one, being *S pneumoniae* the remaining 8% could name neither bacteria correctly.

Finally, respondents were asked to name the antibiotic which is recommended by the National ARI Control Program as the drugs of choice in outpatient treatment of children with pneumonia, 40% of respondents could not offer any answer at all, 36% could correctly name one drug, 20% named drugs which are not recommended by the National ARI Control Program and only 1 respondent (4%) could correctly name all.

Discussion

Clearly the vast majority of respondents interviewed in the course of this study did not have knowledge of the WHO guidelines for management of ARI or recommendations of the National ARI Control Program of Pakistan which works in collaboration with WHO, UNICEF and USAID. There was no significant difference between respondents who had more recently graduated from medical school between respondents who had not. Similarly there was no difference between male and female respondents or younger compared to older. The only factor determining whether or not respondents were fully familiar with the new methods was exposure to recent and specific training in this case at National Institute of Health Islamabad.

Recommendations

1. Re-design of curriculum at College of Community Medicine to include study of new method of ARI case management.
2. Liaison with National ARI Control Programme, Children's Hospital, PIMS, Islamabad to ensure that up-to-date information is disseminated to students at CCM.
3. Organisation of a workshop for the benefit of CCM.
4. Further research with a larger sample to discern how widespread appropriate and useful knowledge about management of ARI is.

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INORGANIC CONTENT OF COTTON DUST, TRASH, AND BRACTS A HELP TO INVESTIGATE THE ETIOLOGY OF BYSSINOSIS

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The exact etiological agents responsible for the biological effects of cotton dust are unidentified, but most investigators believe they are organic in nature. Inorganic compounds have not been considered as significant factors. However, cotton dust, trash and bracts have high inorganic contents (7 - 43% ash), as reported here. More importantly, aqueous extracts of the trash and bracts have inorganic contents as high as 65%, which means a significant amount (10 - 36%) of the inorganic compounds in trash or bract is water extractable. Elements present in the ash include: N₂, C₁₂, P, K, Ca, Mg, Mn, Cu, Zn, S, and O₂. KCl, and K₂SO₄ have been definitively identified. It is suggested that greater attention should be given to the inorganic nature of cotton dust in the etiology of byssinosis.

Introduction

The target health hazards programme, initiated by the occupational safety and health administration of the US department of labour, National Institute of Occupational safety and health and W. H. O, identifies five common work place substances that produce the most significant health hazards to the industrial workers. These materials are silica, asbestos, cotton dust, lead and carbon monoxide.

Despite extensive investigation during the past 20 - 25 years, the exact etiology of byssinosis remains unknown. It does seem to be generally accepted that cotton plant parts, principally the bract in the form of airborne dust particles, contain the causal agents. However, cotton plant parts, and hence cotton dust are a very complex mixture of a wide variety of different classes of substances, including; poly-saccharides; lignums; lipids; proteins; pigments including terpenoids, coumarins, flavonoids, and tannins; inorganic compounds; and histamine {1}. To date investigators in the field {1, 2, 3, 4, 5} have been principally concerned with the organic portion of the cotton dust of plant parts. The inorganic content seems to have been ignored by most investigators, and inorganic compounds have not been considered as significant

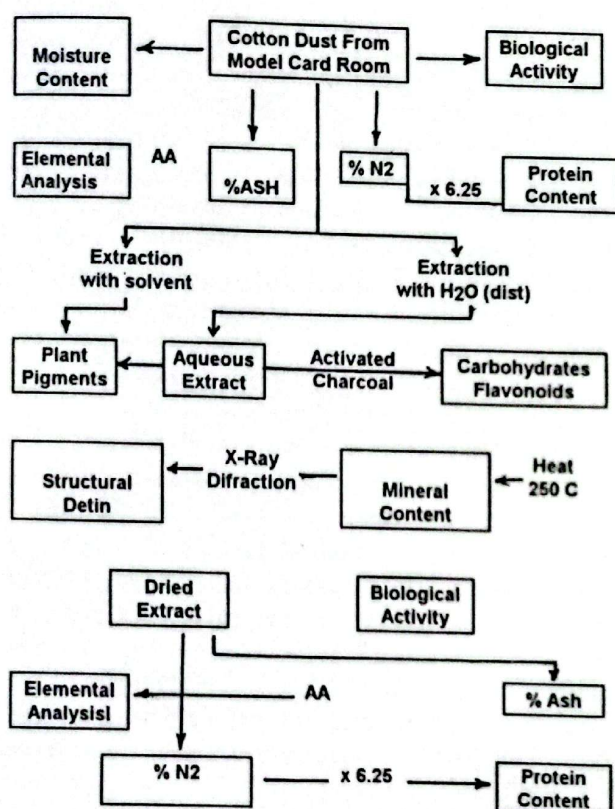
or that cotton contains soil minerals, mainly silicates and silica, which are too low to be of hygienic significance {6}.

Since chemical extraction, involving an aqueous system, of dust particles penetrating the lower bronchial tract is the likely part through which the biological response to byssinosis occurs, we believe that more attention should be given to inorganic components in the etiology of byssinosis. For example, recent studies of the pulmonary effect of coal dust and the role of specific components of the dust in the causation of pneumoconiosis have shown what appears to be a relationship between the quantity of nickel in the coal dust and the incidence of the disorder {7}, indicating that inorganic compounds in dust can play a role in lung disorders. Inorganic compounds in dust and SO₄ cause histamine release in lung tissue {8}, and it has been proposed {9} that cotton dust causes a narrowing of the lung airways through a histamine-release mechanism.

Materials and Methods

The analytical scheme employed in this study is shown in the block diagram (Fig.1). Only the data relating to the mineral content of the cotton dust, etc, are reported here. The carding machine is

equipped with a pneumafil filter system (FCV 8 - 3 MTRK). The air from the card, containing lint and trash components of the cotton, passes through three V - shaped polyester filter bags. The filter captures most of the lint, small particulate matter passes through and back into the card room, and the heavier, largely "lint - free" trash drops onto the floor of the filter chamber. This latter component is termed pneumafil "fallout." After processing each bale of cotton the pneumafil system is cleaned and the "fallout" thrash is collected separately. Typically about 100 g of "fallout" sample are collected from a bale.



FIGURE

Typical diameters of "fall out" particles are ca. 100 μ m. Grab samples (ca. 5 g) were taken of the pneumafil (PN) trash, ground to pass 40 mesh in a Wiley Mill, and the ground sample mixed thoroughly.

The bract samples were hand picked from the crop before the cotton was harvested. Samples from nine different areas were picked green from mature plants and dried for testing. An

electrostatic precipitator collected airborne dust in the card room. This dust, being extremely fine, was not ground in the Wiley mill.

Moisture contents were determined by drying to constant weight at 100 c. The dried sample was ashed at 550 c for 2 h. Aqueous extracts of the ground PN trash and bract were prepared by macerating the dust, etc in distilled water (pH 6.8) 5 times at room temperature over a period of 1 h using a mortar and pestle (1.5 g of dust to 15 ml of water), filtering the resulting mixture through filter paper to remove undissolved material, then through a 0.45 μ m filter to remove bacteria. The filtrate was evaporated to dryness under vacuum in a rotary evaporator @ 60.c. Typical time to dryness were 4 - 6 h, and yields ranged from 50 - 600 mg of dried extract. About 20 mg of the dried extract was used for ash analysis.

Ash analysis of aqueous extracts of the electrostatic precipitator samples are not reported. Elemental analyses were obtained by atomic absorption (Perkin & Elmer, Model 503).

Results and Discussion

To date, airborne dust samples collected in the model card room are either too small for the analysis shown in figure 1, (e.g. the amount of dust on an elutriator filter is ca. 0.05 - 1.00 mg) or the dust have not been separable from the larger - scale collecting filters. Attempts to obtain reproducible ash values of dusts collected on various types of elutriator filters have thus far been unsuccessful. As noted above, PN trash "fallout" samples are practically lint - free and are available in relatively large quantities. While it cannot be unequivocally stated that they contain exactly the same components, or the same run in the model card room, they are a convenient and, we believe, suitable source of samples for chemical analyses.

In Table 1 are shown the ash contents of several PN trash samples selected at random from over 80 analyses. The data for all the samples are summarized in the histogram in figure 2. Most of the samples fall near the range from 8 to 14%, although a number of samples have ash contents significantly higher. To date, no correlation between such variables as cotton variety, location of

growth, harvesting or ginning variables etc. has been established.

Table 1. Ash analyses of Pneumafil samples and of dried aqueous extracts of Pneumafil samples.

Sample No.	Bract Sample	Ash, % Dried aqueous extract	Yield, %	Percent H ₂ O solubility of bract ash
1	11.57	37.63	4.1	13.3
12	12.58	34.29	4.0	10.9
14	12.05	36.62	6.6	19.9
20	11.74	33.46	7.1	20.2
35	16.61	55.47	9.3	31.1
45	11.06	57.11	2.5	12.9
56	14.23	65.14	8.0	36.6
63	16.58	63.53	7.6	29.1
75	15.58	44.17	6.6	18.8
79	12.62	43.86	4.1	14.0
87	9.31	31.88	4.0	13.7
94	7.07	32.70	5.9	27.1

Table 1 and figure 3 give similar data for the dried aqueous extracts of the PN samples. The increase in ash contents compared to the raw samples is dramatic. The average ash content of the extracts is about 45%, and the average increase over three - fold. Thus a high percentage of the extractable content of the trash is of a mineral nature. The yield of water extractable of the PN samples reported here varies from ca. 3 - 9%, after correcting for moisture content, and are also given in Table 1. Based on the ash values of the PN samples and the yield of water extractable, the % solubility of the ash can be determined. If

- X = weight of a dry sample,
A1 = weight fraction of ash,
W = weight fraction of dried aqueous extract,
A2 = weight fraction of dried aqueous extract ash,

then

$$\frac{(XW - A2)}{X A1} \times 100\% = \frac{W A2 \times 100\%}{A1}$$

= % solubility of ash.

The values of this parameter for the PN samples are given in the last column in Table 1. The range is from 10 - 35%, a significant fraction of the total inorganic content of the PN samples.

Table 2. Ash analyses of bract samples.

Sample No.	Bract Sample	Ash, % Dried aqueous extract	Yield, %	Percent H ₂ O solubility of bract ash
73-1	21.43	36.21	10.5	17.7
73-3	12.80	37.91	12.0	35.8
73-4	21.24	39.95	15.9	29.9
73-6	16.58	35.48	4.7	10.0
73-7	19.51	40.82	18.0	37.9
73-8	21.18	41.20	15.5	30.2
73-9	8.52	29.84	3.1	10.9
73-10	21.40	39.16	15.8	28.9
73-11	10.90	37.46	7.1	24.6
73-12	22.29	38.85	10.8	18.8
73-13	22.62	40.13	18.0	31.8

In table 2 are similar data for the series of bract samples. the inorganic content (ca. 40%) of the dried aqueous extract is again striking, and with the exception of sample 73 - 9, the values are very similar to each other. the % water solubility of the ash is in the same range as for the PN samples, and the yields from the aqueous extraction range from ca. 3 to 18%.

Table 3. Ash analyses of electrostatic precipitator dusts.

Sample No.	Ash, %
1	43.98
2.	38.99
3.	31.03

In Table 3 are the ash contents of three samples recovered from the electrostatic precipitator in the model card room. The ash values are especially high compared to the bracts or the PN samples. It is possible that this sampling procedure has a bias toward the ignorances. In any case, the samples is collected from airborne card room dusts, and it is in the range of ash values reported by silverman and viles {10} Roach and Schilling {6}. Partial elemental analyses of several PN samples and one dried aqueous extract are shown in table IV. The sum of the values of these analyses is appreciable below the ash values in tables 1 and 2. However, several elements (e. g. Si, O₂, and S) known to be present have not been determined. The aqueous extracts contain significantly higher amounts of K, Ca, Mg, Mn, and Cu. To date only K₂CO₃ and K₂SO₄ have been unequivocally identified, by x-ray diffraction, in the aqueous extracts of the PN and bract samples. The KCI comprises 1 - 2% of the aqueous extract.

As noted above, it is generally believed that the byssinotic causal agent, though still unidentified, is organic in nature and is contained in the bract. Significantly, aqueous extracts of the bract show high biological activity {11}. In addition, Morey et al. {12} have shown that bract is highly friable, and its relative content increases as the particle size of cotton trash become smaller; thus it is likely that a large portion of the airborne dusts are bract.

Also, as discussed above most workers in the field have tended to ignore the inorganic content of

cotton dust as potential causal agent, either on the basis that the inorganic content of the dust is too small, or that silica in the cotton dust arising from soil minerals are too low to be of hygienic significance.

However, the high ash contents of the PN samples and especially the bract and electrostatic precipitator samples, as reported here, are striking. The high ash contents of the aqueous extracts of the PN and bract samples are particularly noteworthy, as the byssinotic causal agent(s) must be extracted from the dust in the lung airways via an aqueous system. In addition, the inorganic compounds reported here cannot be solely silica or silicates, as plant tissues (e. g. bract) have low silica contents and both silicates have low water solubility. While there are no definitive data yet relating the inorganic content of the cotton dusts to the incidence of byssinosis, we believe, in view of the data presented here, that more attention should be given to this component of the cotton dust. In particular, it would be worthwhile to determine whether the extractable inorganic component of the dust can contribute to byssinosis, or if this component shows biological activity in any of the tests presently used to measure acute byssinotic activity. While Nicholls and Skidmore {13} did not find significant correlation between the potassium content of cotton dust and smooth muscle contractor activity, a contractor agent was present in their aqueous extract.

Elemental Analyses of Dried Aqueous Extract of Pneumafil Trash

PN NO.	N, %	P, %	K, %	Ca, %	Mg, %	Mn, ppm	Zn, ppm	Fe, ppm
35	1.23	0.27	7.87	6.48	1.35	108	47	23
55	1.80	0.21	2.45	4.42	0.60	41	2	270
61	1.84	0.18	1.69	2.34	0.30	59	61	526
62	1.97	0.20	1.58	1.12	0.32	51	64	149
68	2.80	0.34	1.45	1.71	0.34	81	26	218
71	2.09	0.22	1.68	2.19	0.26	53	27	530

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STUDY OF NOSOCOMIAL INFECTION IN SURGICAL WARD OF SERVICES HOSPITAL, LAHORE

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Summary

273 samples were collected over period of one year from the surgical ward. It was found that the rate of nosocomial infection was very high (76%). Highest rate of infection was in the wound (76%) followed by infection in the urinary tract (63%) and respiratory tract (35%). From all the sites the commonest organisms isolated were *Pseudomonas aeruginosa* (34%) followed by *E. coli* (19%), *Klebsiella* species (13%), *Proteus* sp. (8%), *Acinetobacter* sp. (7%), *Staph. aureus* (6%), *Strept. faecalis* (4%), *Enterobacter* sp. (3%), *Candida albicans* (3%), *Haemophilus* sp. (1%), *Strept. pyogenes* (1%), *Strept. pneumoniae* (1%). Nosocomial infections are a major public health problem not only to the patients, but also to the patients family, Community and state. The necessity for the establishment of hospital cross infection control is amply justified and recommended.

Introduction

The definition of nosocomial infection by Centre for Disease Control (CDC) is infection that develops within a hospital. It is neither present nor incubating at the time of hospital admission where the incubation period is known. If the incubation period is unknown signs and symptoms of infections that develop 48 hours or more after admission are arbitrarily considered to be nosocomial. Infection developing within 48 hours are arbitrarily considered to be community acquired unless there is evidence otherwise. (1)

Based on the surveillance and prevalence data, Bennett and Brachman (2) estimated that approximately 5% of all patients admitted at hospitals in United States contracted an infection when hospitalized. There are some hospitals with a lower rate but others have more serious problem. They further stated that if a hospital indicated that it had no problem, then it meant that the staff was not conducting the surveillance. Nosocomial infections are not limited to the United States they occur in hospitals through-out the world and are more prevalent and serious in developing countries. This study was under taken to find out the extent, cause, reservoir, vehicle of transmission and methods of control of nosocomial infection in Surgical Ward of Services Hospital Lahore.

Materials and Methods

A total of 273 samples were collected over a period of one year from surgical ward-I of Services Hospital, Lahore. These samples were taken from different sites depending on the type of operation and infection site of the patients.

Detailed history of the patient was taken according to the proforma provided. Specific information about the infection, its pattern and complication if any were sought for. The patient was subjected to thorough clinical examination to arrive at the diagnosis. The following samples were collected for investigation:-

- Pus from infected wounds, abscess or burn cases.
- Urine from patients suspected of urinary tract infections.
- Sputum and throat swab from patients with respiratory tract infection.
- Blood from cases of suspected bacteria.

Macroscopic and Microscopic examination of collected specimens was done and recorded. Culture was put up on appropriate culture media and incubated aerobically and anaerobically. After 18-24 hours incubation if growth was obtained aerobic bacteria were identified and classified as described by

Cowan and Steel (3). Anaerobic bacteria were identified as described by Sutter et al (4).

Results

Out of 273 specimens tested, 182 (67%) were positive for nosocomial infection. Table (1) gives the site of infection of patients in the surgical ward. It was noted that the major infection in the surgical ward was the infection of surgical wounds (76%).

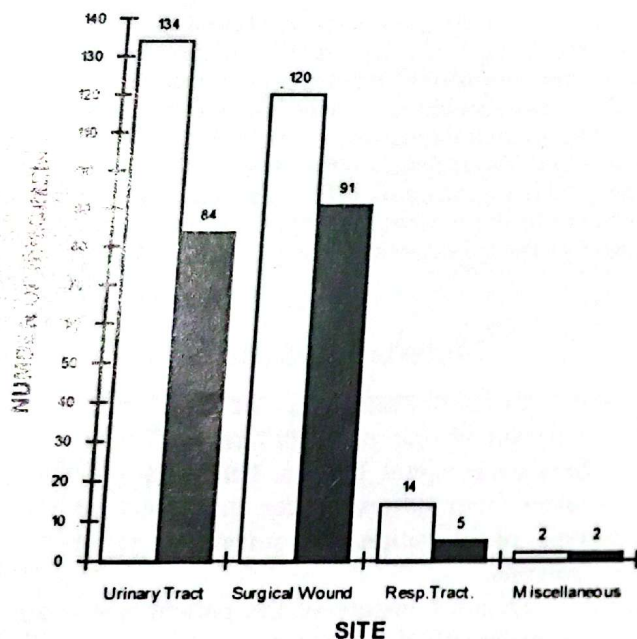


FIG. 1: SITES OF INFECTION IN PATIENTS IN THE SURGICAL WARD (Table 1)

Table 1: Sites of infection in Patients in the Surgical ward

Site	No. of Specimens	Specimens Positive	
		No.	%
Urinary Tract	134	84	63%
Surgical Wound	120	91	76%
Respiratory Tract	14	5	35%
Miscellaneous	5	2	40%
Total	273	182	

Table (2) gives the details of pathogens isolated from specimens. It indicates that the

commonest organism isolated is *Pseudomonas aeruginosa* (34%), Table (3) gives the pathogens isolated in different combinations from the specimens. Out of total 182 positive specimens, 56 (31%) yielded two organisms in combination. *E. coli* and *Pseudomonas aeruginosa* were isolated together most frequently, 17 (30%), the second most common combination was *Klebsiella sp.* and *Pseudomonas aeruginosa*, 9 (16%). The rest of the combination of organisms varied from (7% - 2%).

Table 2. Pathogens Isolated from Specimens of the Surgical Ward

Name of Organisms	Number	Percentage
<i>Pseudomonas aeruginosa</i>	80	34%
<i>Esch coli</i>	46	19%
<i>Klebsiella sp.</i>	32	13%
<i>Proteus sp.</i>	20	8%
<i>Acinetobacter sp.</i>	16	7%
<i>Staph. aureus</i>	14	6%
<i>Strept. faecalis</i>	10	4%
<i>Enterobacter sp.</i>	6	3%
<i>Candida albicans</i>	6	3%
<i>Haemophilus sp.</i>	3	1%
<i>Strept. pyogenes</i>	2	.8%
<i>Strept. pneumoniae</i>	1	.4%
<i>Citrobacter sp.</i>	1	.4%
<i>Bacteroides sp.</i>	1	.4%
Total		238

Table 3. Pathogens Isolated in Combination from the Specimens of Surgical Ward

Name of Organisms Isolated in combination	Number	Percentage
<i>Esch. coli</i> + <i>Pseudomonas aeruginosa</i>	17	30%
<i>Klebsiella sp.</i> + <i>Pseudomonas aeruginosa</i>	9	16%
<i>Esch. coli</i> + <i>Strept. faecalis</i>	4	7%
<i>Pseudomonas aeruginosa</i> + <i>Acinetobacter sp.</i>	4	7%
<i>Esch. coli</i> + <i>Proteus sp.</i>	3	5%
<i>Klebsiella sp.</i> + <i>Proteus sp.</i>	3	5%
<i>Esch. coli</i> + <i>Candida albicans</i>	2	4%
<i>Klebsiella sp.</i> + <i>Strept. faecalis</i>	2	4%

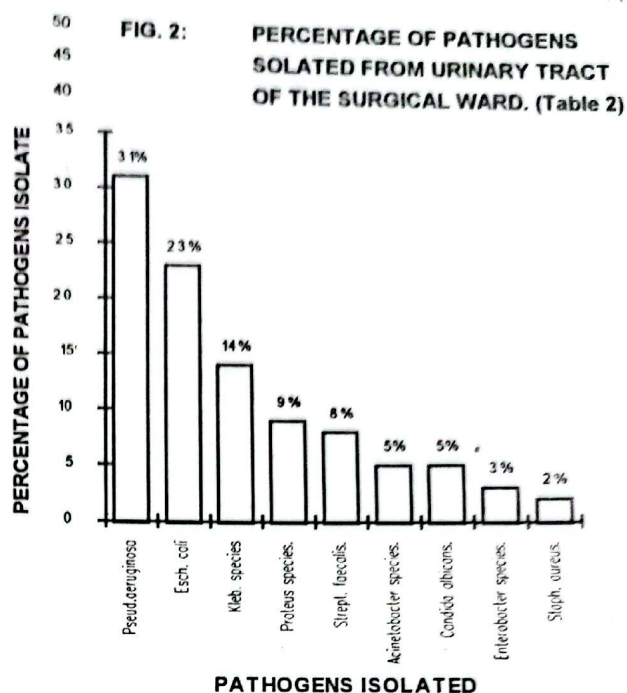
Name of Organisms Isolated in combination	Number	Percentage
<i>Pseudomonas aeruginosa</i> + strept. faecalis	2	4%
<i>Pseudomonas aeruginosa</i> + <i>Candida albicans</i>	2	4%
<i>Each. coli</i> + <i>Acinetobacter</i> sp.	1	2%
<i>Klebsiella</i> sp. + <i>Candida albicans</i>	1	2%
<i>Pseudomonas aeruginosa</i> + <i>Staph. aureus</i>	1	2%
<i>Pseudomonas aeruginosa</i> + <i>Citrobacter</i> sp.	1	2%
<i>Proteus</i> sp. + <i>Strept. faecalis</i>	1	2%
<i>Haemophilus</i> sp. + <i>Strept. Pneumoniae</i>	1	2%
<i>Staph. aureus</i> + <i>Candida albicans</i>	1	2%
Total	56	

Urinary Tract

Table (4) and Figure (II) gives the pathogens isolated from the urinary tract. It indicates that *Pseudomonas aeruginosa* is the commonest organisms, (31%) causing infection of the urinary tract, followed by infection due to *E. coli* (23%), *Klebsiella* sp. (14%), *Proteus* sp. (9%), *Strept. faecalis* (8%), *Acinetobacter* sp. (5%), *Candida albicans* (5%), *Enterobacter* sp. (3%) and *Staph. aureus* (2%).

Table 4. Pathogens Isolated From Urinary Tract in the Surgical Ward

Name of Organisms Isolated	Number	Percentage
<i>Pseudomonas aeruginosa</i>	36	31%
<i>Each. coli</i>	27	23%
<i>Klebsiella</i> sp.	16	14%
<i>Proteus</i> sp.	11	9%
<i>Strept. faecalis</i>	10	8%
<i>Acinetobacter</i> sp.	6	5%
<i>Candida albicans</i>	6	5%
<i>Enterobacter</i> sp.	4	3%
<i>Staph. aureus</i>	2	2%
Total	118	



Surgical Wounds

Table (5) and figure (III) show the pathogens isolated from pus of surgical wounds in the ward. It indicates that *pseudomonas aeruginosa* is the commonest organisms (38%) causing infection of the surgical wounds, followed by infection due to *Each. coli* (16%), *Klebsiella* sp. (13%), *Staph. aureus* (10%), *Acinetobacter* sp. (9%), *proteus* sp. (8%), *Enteracter* sp. (2%), strept. *Pyogenes* (2%),

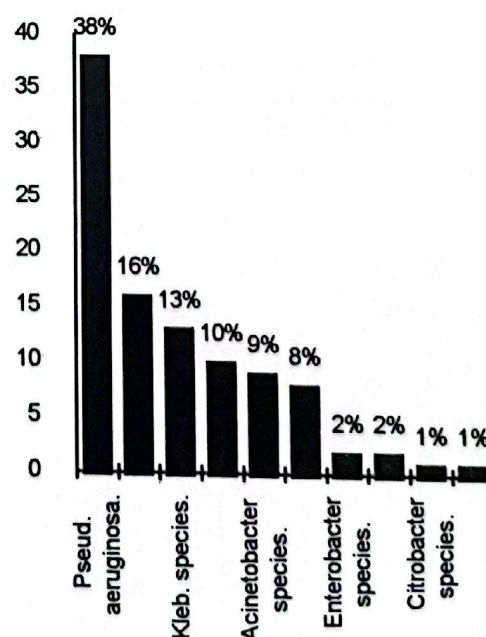


FIG. 3: PERCENTAGE OF PATHOGENS ISOLATED FROM WOUND OF PATIENTS IN THE SURGICAL WARD. (Table 3)

Citrobacter sp.(1%) and *Bacteroides* sp.(1%). Although infection by *Pseudomonas aeruginosa* in healthy persons is nearly always trivial and superficial but the percentage (38%) of *Pseudomonas aeruginosa* isolated indicates that it was the commonest organisms isolated from wound in the surgical ward. This may be due to the fact that in hospitalized patients the resistance to infection is low and the organisms are introduced directly into the body through the wounds. Thus by passing the natural defence mechanisms of the body.

Table 5. Pathogens Isolated from Wound of Patients in the Surgical Ward

Name of Organisms Isolated	Number	Percentage
<i>Pseudomonas aeruginosa</i>	43	38%
<i>Each. coli</i>	18	16%
<i>Klebsiella</i> sp.	15	13%
<i>Staph. aureus</i>	11	10%
<i>Acinetobacter</i> sp.	10	9%
<i>Proteus</i> sp.	9	8%
<i>Enterobacter</i> sp.	2	2%
<i>Strept. Pyogenes</i>	2	2%
<i>Citrobacter</i> sp.	1	1%
<i>Bacteroides</i> sp.	1	1%
Total	112	

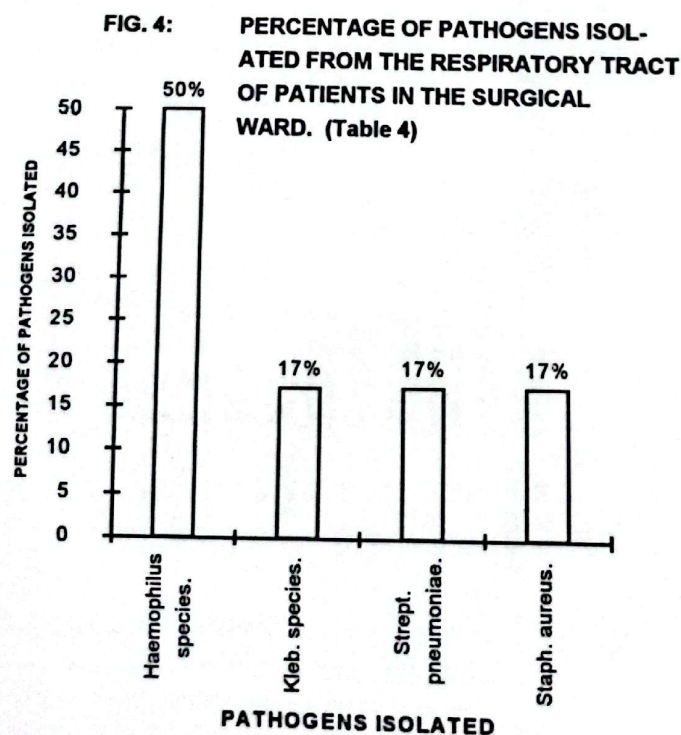


Table 6. Pathogens Isolated from Respiratory Tract of Patients in the Surgical Ward

Name of Organisms Isolated	Number	Percentage
<i>Haemophilus</i> sp.	3	50%
<i>Klebsiella</i> sp.	1	17%
<i>Strept. pneumoniae</i>	1	18%
<i>Staph. aureus</i>	1	17%
Total	6	

Respiratory Tract

Table (6) Figure (IV) give the pathogens isolated from the respiratory tract of patients. As the number of specimens collected and organisms isolated is very small so it is difficult to comment on them.

Miscellaneous Group

This group includes four specimens of bile and one of ear swab. The number of specimens collected and pathogens isolated is very small so it is difficult to comment on them.

Discussion

Nosocomial infection is a major public health problem to the patients as well as to the patient's family, community and the state, Bennett and Brachman⁽²⁾ estimated that approximately 5% of all patients admitted to hospitals in United States contract an infection during hospitalization. Nosocomial infection occurs in hospitals through out the world and are more prevalent and serious in developing countries.

In the present study it was seen that infection rate was high (67%) in the surgical ward. This finding corresponds with studies carried out in other hospitals. As quoted by Bennett and Brachman⁽⁶⁾ analysis of SENIC data shows that patients in the surgical ward were at highest risk of wound infection and also has higher rate of infection at other sites. The surgical patients accounted for 71% of all nosocomial infection.

In our study as shown in Table I the highest infection was found in the wound (76%) followed by infection in the urinary tract (63%) and respiratory tract (35%). But in a study carried out at the CDC (1), the findings are somewhat different from our study. In the CDC study urinary tract infection was the most common infection and occurred in about 40-50% of all nosocomial infections. Wound infection was the second most common site (30%) followed by respiratory tract infection. This may be due to the fact that working conditions in our country are very different from other developed countries. Here in the ward there are large number of patients, visitors, less space per patients, less nurses, less isolation facilities and less awareness towards the spread of infection. All above mentioned factors contribute to spread of infection from infected wound of one patient to the other in the ward.

In another study (the SENIC project) it was estimated that U.T.I. contributed to 42% of all nosocomial infections, surgical wound infection 24% respiratory tract infection 10%, nosocomial bacteria as 5% and other 19%.⁽⁷⁾ This was the overall infection percentage among general medical and surgical hospitals studied. However when the surgical wound infection ratio was calculated (by dividing the number of infection by the total number of operations performed), it came out to be 2.79 infection per 100 operation. This was higher risk than for U. T. I. which was 2.39 per 100 admissions. This finding corresponds with our study.

As shown in Table (II) from all sites in the surgical ward, *Pseud. aeruginosa* (34%) was the commonest organism isolated followed by *Esch. coli* (19%). *Klebsiella* species (13%) and others.

In a study carried out by Goldman et al (8) based on a five years surveillance in a Neonatal intensive care unit, it was found that 60% of nosocomial infections were caused by *G. Negative bacilli* which corresponds with our results. They also reported *Pseudomonas aeruginosa* to be the commonest organism causing nosocomial infection.

In another study carried out during an 18 months period by Mc. Cormack and Barnes (9) in a new hospital in United Arab Emirates, 379

nosocomial infection were identified in 310 patients. The most common organism causing infection was found to be *Esch. Coli* (22.7%) followed by *Pseudomonas* species (17.5%) and *Staph. aureus* (16.7%).

The results of our study are also different from the results of Bennett and Brachman(6). They found *Esch. coli* to be the most common pathogen isolated from all nosocomial infections regardless of site followed by *Staph. aureus*, *Enterococci* and *Pseud. aeruginosa*.

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NUTRITIONAL ANAEMIA WITH REFERENCE TO IRON STATUS IN WOMEN OF ISLAMABAD

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Summary

Iron, copper status and hematological parameters hemoglobin, hematocrit were determined in 102 adult anaemic women. Of the subjects 34% had hemoglobin between 7.8 - 8.9 g/dl and hematocrit between 25-33 %. The serum iron level was low < than 48 ug/dl in 78.0 % of the subjects. Majority of the subjects had adequate levels of serum copper and total protein. The present study showed that the consumption of iron rich food was seen in 29 % of persons. The high prevalence of iron deficiency anaemia could be attributed to consumption of iron low food. Moreover these food commodities contains antinutritional factors hence, rendering poor iron availability.

Introduction

Nutritional diseases develop as a result of food fadism, poor appetite, improper digestion or absorption, competitive humeral or cellular inhibition and inordinate loss of nutrients and other products from the body. Nutritional anemia may arise from any of these causes acting alone or collectively. According to WHO, nutritional anemia can be defined as a condition in which hemoglobin concentration, the hematocrit or number of RBC is lower than normal due to a deficiency of one or more essential nutrients regardless of the cause of such deficiency (1).

It is recognized that normal hemoglobin level varies with age sex, weight, physiological status and altitude. In developing countries lack of availability of proper nutrients due to adverse economic condition and social customs is the basic cause of nutritional anemia. An attempt was made during the present investigation to find out the severity of anemia in vulnerable groups of females belonging to different low socio-economic levels.

Materials & Methods

The study was conducted in the residential colony of the employees of National Institute of Health, Islamabad. Subjects were apparently

healthy volunteers with age ranging from 14 to 42 years. A total of 259 women irrespective of their marital and physiological status were screened randomly for the presence of anemia. Subjects with hemoglobin less than 11g/dl and hematocrit below 33% were again contacted. Care was taken to draw the blood for analysis at the mid point of menstrual cycle. i.e. 10 - 14 post period days (preovulatory). To keep homogeneity in the group, it was decided not to include any post menopausal women. 5 - 7 ml venous blood was drawn, serum was separated and subsequently was stored at - 20°C until analyzed. The serum was analyzed for iron, copper, total proteins hemoglobin by hemocue hemoglobin photometer, hematocrit by wintrobe hemotocrite tube by Biuret method(3). Serum was analyzed for Copper and zinc by atomic absorption spectrophotometry with air acetylene flame (4). Peripheral blood films were stained with Leishman stain to determine the type of anemia.

Results

The mean age of the subjects was 26 years. Mean monthly income was Rs. 2000, with a range of Rs 1500 - 2500. Out of 102 anemic subjects 71 (69.0%) were married out of which 11 (15.40%) were pregnant, 26(36.6%) were lactating, While

31 were single (31%) the average family size was five members.

Table 1: Shows hematological data

Parameter	Nonanemic women# mean $\pm$ SE	Anemic Woman* mean $\pm$ SE
Hemoglobin g/dl	12.8 $\pm$ 0.12	9.1 $\pm$ 0.36
Hematocrit %	38 $\pm$ 1	29 $\pm$ 1
#Hb > 11g/dl		*Hb < 11g/dl

Table 2: Shows the biochemical data of the anemic women i. e; total protein, iron and copper. Among these 6.8% had low total proteins (mean 6.26 ± 0.23) iron concentration was found to be less than 50 ug/dl in 40.2% women (mean 34.3 ± 0.12). It was observed that 17.7 % of the females had low copper with a mean of 66.3 ± 4.83 .

Table 2: Biochemical Data of the Subjects

Parameters	Concentrations mean $\pm$ SE		
	Low	Normal	High
Serum Iron			
Ug/dl	34.3 $\pm$ 0.12	96.6 $\pm$ 3.7	154.8 $\pm$ 2.35
Serum Copper			
Ug/dl	66.4 $\pm$ 4.83	108.5 $\pm$ 2.78	154.8 $\pm$ 1.60
Total Serum			
Proteins g/dl	4.24 $\pm$ 0.23	7.14 $\pm$ 0.07	8.56 $\pm$ 0.13

Figure 1. Shows the food consumption pattern of anemic subject with reference to iron rich foods. It was observed that about 70% of women do not

eat animal proteins on regular basis. There was no appreciable difference in the intakes of other food items e.g; pulses, green leafy vegetables and fruits. Almost all the women invariably consuming tea

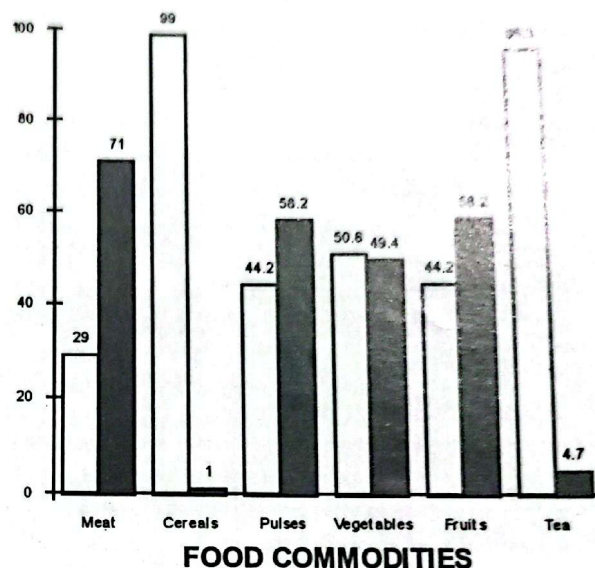


FIG. 1: SHOWING FOOD CONSUMPTION PATTERN OF THE SUBJECTS

Discussion

Hemoglobin below 11g/dl, hematocrit below 33% serum iron level below 50 ug/dl are considered to be indicative of patent anemia. General medical practionnar in the field assumes that hemoglobin and hematocrit levels are equally useful in screening anemia (5) This assumption is supported by a close correlation between hemoglobin and hematocrit variations (6).

The data revealed gained further support and probably confirmed the above hypothesis that among 102 anemic women 57% had hemoglobin ranging between 9 - 11 g/dl and hematocrit between 31 - 33. While 43% had hemoglobin levels ranging between 7.8 - 8.9 g/dl and hematocrit values ranged between 25 - 33%. These values suggest serve degree of anemia in the subjects. A fall in the level of hemoglobin (9g\dl and hematocrit 29%) indicates depletion of

serum iron from mean value 34.3 ug/dl. In the present situation where the subjects have low serum iron, if their dietary intake remains low in iron rich foods their body iron status is likely to worsen. A small percentage of the subjects (3.9%) with high serum iron content were considered anemic because of low hemoglobin and hematocrit (table 1). It may be speculated that these individuals used therapeutic iron drugs.

The erythrocytes in 25% of anemic subject were found to be hypochromic as ascertained by the stained peripheral blood film. This has provided evidence that anemia is due to iron deficiency. As seen in table 2, all the subjects had adequate stores of copper and their anemia appeared to have been caused by the factors other than a deficiency of this element.

The overall nutritional status was assessed by serum total proteins. It was found that 72.6% of the subjects had normal serum protein levels. Although these figures are quite informative and certainly show that in spite of poor iron intakes the subjects had adequate dietary intake protein. The food consumption pattern of the subject appeared in figure 1. Among various food commodities meat is not consumed on regular basis. The consumption of pulses, vegetables, and fruits less

variation was found. 'Presence of substances like phytates as, phosphates and tannins in plant foods consumed by the subject acts as inhibitors of iron absorption could be a leading cause of high prevalence of anemia.

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FASTING EFFECT ON VARIOUS BODY PARAMETERS DURING RAMADAN

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30 male subjects aged 17-57 years were included in this study. Their body weight was recorded. The blood samples were collected before and on the first, 11th, 20th, 29th day of Ramadan and 30 days after the month of fasting and examined for serum glucose, bilirubin, calcium, cholesterol, phosphorus and protein levels. A reduction in body weight was observed during the month of Ramadan. Serum glucose decreased during first 11 days of Ramadan but latter showed a progressive rise and reached pre-Ramadan level by 29th day. A significant increase in serum bilirubin and slight decrease in calcium and cholesterol was found during Ramadan. No significant change was noted in the concentration of phosphorous and total protein. However, all the affected levels returned to basal values one month after Ramadan.

Introduction

Ramadan fasting is a religious practice for all healthy adult Muslims. However, patients, persons during journey of more than 49 miles and women during periods or pregnancy can postpone and children are exempted from this religious duty.

Ramadan is the ninth month of Islamic lunar calendar. As the lunar year is of 354 days, hence Ramadan begins 11 or occasionally 12 days earlier each solar year. That is why Ramadan occurs in all the four seasons, changing season every eight to nine years.

During Ramadan Muslims are allowed to eat and drink between sunset and dawn only but majority of the Muslims have two main meals, one after sunset and the other before dawn. (1) Body weight as determined by age and height, and normal values of glucose, bilirubin, calcium, cholesterol, phosphorous and protein are essential indicators of health. Normal rate for ponderal index is 12 (2,3). As Ramadan besides spiritual purification also brings some physical changes in the body, the present study was designed to investigate the effects of this fasting on various biochemical parameters.

Materials and Methods

Thirty healthy males were selected and various biochemical parameters were studied during Ramadan (February 23 to March 22, 1993). The length of each fasting day was approximately 14 hours. Each person was physically examined and information regarding age, height, general health and dietary history were recorded. The subjects of the study had two main meals, their SEHAR meal (a meal before dawn) was consisting of meat, vegetables, bread and tea and their IFTAAR meal (a meal at sunset) was variable but usually composed of the same substances as sehar plus different types of sweets beverages and fruits.

The weight was recorded with light clothes on by using a standard weighing machine and about 6 ml fasting whole blood samples were collected from each individual immediately before sunset one week before Ramadan and on the first, 11th, 20th and 29th day of Ramadan and 30 days after the month of fasting was over. To one ml whole blood Ethylenediaminetetraacetic acid (EDTA) was added and tests for hematocrit, blood counts were performed by routine

laboratory methods. From remaining 5ml blood serum was separated and analysis was carried out on the same day. Serum glucose was determined by O-Toluidine method, (4) Bilirubin by Jendrassik and Gro Method, (5) Calcium by colour reagent method, (6) Cholesterol by Boehinger Kit method, (7) Phosphorous by Reagent method, (8) and for estimation of total protein Biuret Method (9) was used. T-test was applied for determination of significance.

Results

A decrease was noted in body weight of each subject during Ramadan. The average body weight was 64.9 ± 9.1 kg before Ramadan and decreased to 62.8 ± 9.2 , 62.4 ± 8.9 and 61.1 ± 9.0 kg on the 11th, 20th and 29th day of Ramadan respectively. The results of three blood parameters are given in Table -1. Serum glucose level decreased till 11th day of fasting, then increased and remain unchanged. The mean concentration of serum bilirubin on the first day and 11th day was approximately 2.5 times the basal value. Then it become twice basal level on the days 20th and 29th of Ramadan and after month of Ramadan its concentration was almost equal to basal level. There was a slight decrease in cholesterol level during Ramadan.

A slight decrease in serum calcium levels was observed in our study. Average calcium concentration before Ramadan was 9.5 ± 0.5 mg/dl dropped to 8.6 ± 0.6 mg/dl on the 11th day of the month of Islamic fasting. On the 20th and 29th days of Ramadan, mean serum calcium levels were 9.2 ± 0.6 and 9.0 ± 0.3 mg/dl, one month after Ramadan serum calcium concentration increased and was 9.4 ± 0.8 mg/dl. There was no significant changes in concentrations of phosphorous and protein throughout Ramadan. Mean serum phosphorous was 3.8 ± 0.6 mg% before, during and after one month of Ramadan. The average total protein was 7.38 ± 0.04 g% in each analysis of the present study.

Discussion

Ramadan is the ninth month of Islamic lunar calendar and is one of the fundamental bases of the religion. It is celebrated throughout the Islamic world with great zeal. The experience of Islamic fasting teaches Muslims self-restraints, self discipline and enables them to appreciate the hunger of impoverished.

Table 1: Average Serum Glucose, Bilirubin And Cholesterol Levels (MG%dl) Before During And after Ramadan.

	Basal Values	Days of Ramadan				30 Days
		1	11	20	29	
Glucose	81.2 ± 3.9 $P < 0.0001$	73.5 ± 3.8 $P < 0.001$	69.0 ± 1.9 $P < 0.001$	75.5 ± 2.0 $P < N.S.$	81.5 ± 3.6 $P < N.S.$	81.7 ± 3.7
Bilirubin	0.52 ± 0.14 $P < 0.0001$	1.22 ± 0.2 $P < 0.0001$	1.43 ± 0.1 $P < 0.001$	0.92 ± 0.2 $P < 0.01$	0.85 ± 0.3 $P < N.S.$	0.53 ± 0.1
Cholesterol	204.1 ± 21.8 N.S.	202.2 ± 21.6 N.S.	202.2 ± 21.6 N.S.	202.2 ± 21.9 N.S.	203.3 ± 21.9 N.S.	203.9 ± 21.7

Islamic fasting is distinct from other religion fasting by the fact that it is complete fasting from dawn to sunset regularly for one month. Due to moderate nature and time it provides a unique model fasting, it could therefore, be significant to determine the physical and biochemical changes it brings forth.

It was observed that body weight decreased in each subject during Ramadan and one month after Ramadan it had increased to pre-Ramadan value. The change in body weight reflected caloric intake; insufficient intake of nutrients and utilization of fat reserves resulting in weight loss.

In the present study we also found a significant decline in glucose level on the first and 11th day of Ramadan but later shows a progressive rise and reached pre Ramadan values on 29th day. Similar observation were reported by Azizi and Rasouli (10) Some workers have suggested that due to continuous starvation the level of glucose decreases. (11), (12). The liver begins glycogenolysis four to five hour after a meal. This process may maintain blood glucose for 10 to 12 hour, alongwith glucose genesis which accounts for 25% of glucose released in the circulation. (12) During a prolonged fasting in subject whose activities are maintained, the blood sugar falls somewhat after about 2 days, usually reaching a minimum at 11 day. (13) The fall is of great degree and occurs more promptly in women. (13) With continued fasting, the blood sugar rises gradually during 12-20 days and then reached the original level (14) The initial drop may be due to depletion of preformed hepatic glycogen, which is necessarily maintained subsequently solely by gluconeogenesis from tissue protein. The gradual return to normal is affected by the homeostatic mechanism, important adjustments include decreased secretion of insulin (due to hypoglycemia) and thyroxine (due to starvation) with consequent decrease in utilization of glucose and increased adrenocortical activity (due to stress of starvation), with consequent increased gluconeogenesis.

In our result we also observed a significant increase in serum bilirubin during Ramadan. Our finding are similar to those reported earlier. (15,16) Continuous fasting results in a rise in the unconjugated fraction of serum bilirubin. The rise becomes significant after 13 hour of fasting. It is

of great interest that bilirubin level was comparatively less on days 20 and 29 as compared to day 11 of Ramadan. The fall in serum bilirubin coincides with a rise in serum glucose levels during the later days of Ramadan, suggesting carbohydrates depency for amelioration of fasting hyperbilirubinemia. A slight decrease in calium level occurred on the 11th day of Ramadan. According to previous studies serum calcium decreased and there occurred a significant increase in urinary excretion of calcium during prolonged continuous fating. (17) The exact cause of the slight decrease in serum calcium during Ramadan is not clear. However, the factors of some importance could be those concerned with (a) its intake and absorption (b) its deposition in and mobilization from the bones and (c) its excretion by the kidneys.

In our study we also found a slight decrease in cholesterol level during Ramadan. The main reasons responsible for its decrease in the body are:

- (1) Reduction in dietary satiated fats lower the cholesterol concentration.
- (2) At any given level of total dietary fat, isocaloric substitution of unsaturated for saturated fats result in decrease in serum cholesterol.
- (3) Deficiency of cholesterol also depends wether or not there are stores or reserves food in the body.
- (4) As due to fasting in Ramadan glucose level decreases on 11th day it is clear that when fasting continue for more than 13 hours liver glycogen is depleted and in prolonged starvation the body metabolism shifts to the utilization of fats and hence the concentration of cholesterol falls.

No significant change was noted in the concentration of phosphorous. Our results are similar to previous studies. (17) The reason for normal level of phosphorus may be its large storage in the body and less requirement the body.

During fasting in Ramadan no significant change was observed in the concentration of protein. Serum protein level depends on protein in take. (18) As there is no change seen during Ramadan, this shows that total protein intake in our people during ramadan was nearly same as the recommended intake. (19) In addition, food proteins are generally readily digested, very little

escaping in the faeces under normal conditions and the human body contains countless different types of proteins. Hence its concentration is not easily affected.

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DISTRIBUTION OF "ABO" AND "RH" BLOOD GROUPS IN THE RESIDENTS OF SINDH

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Summary

Physiological variations in the blood group distribution in different parts of the world or different races in the same country are commonly observed. The present study has been carried out to evaluate the distribution and pattern of different blood groups in this part of the country (SINDH) and it is compared with the distribution of blood groups in other countries and also in different cities of Pakistan. The Results show that in our population blood group "B" is more common and constitutes 30% of total population while it is very low in U.S.A. and England population. The incidence of blood group "A" in U.S.A. and England is more than 40%, whereas incidence of group "A" in our study is less than 25%. In conclusion we found that our results are different from the results of U.S.A and England but are very close to the studies carried in different parts of the country and also in India.

Introduction

The transfusion of blood and blood products is the most common living transplant. The importance of blood groups in clinical medicine lies in the fact that an antigen can cause harmful clinical effects such as:

1. Haemolytic transfusion reactions.
2. Haemolytic disease of the new borns.
3. Identification of blood groups also helps us.
4. In disputed paternity cases.
5. In Forensic Medicine.
6. In cases of infertility.

The term "blood group" is applied to the genetically determined antigens that can be detected on the red-cell surface by specific antibodies. With the exception of one X-linked system (xq), the locus for each blood group system is situated on an autosome chromosome. For example, the Rh locus is on the chromosome number one and the ABO locus is on the chromosome number nine.

Landsteiner (1) for the first time described the existence of serological differences between the individuals. After his discovery at least one hundred different antigens are recognised with specific antisera, and fifteen well defined systems of antigens have so far been demonstrated in the peoples of European ancestry.

Table 1: Order of discovery, with year, system of group, antigens and antibodies

Year of discovery	System of Blood groups	Main antigens on red cells	Naturally occurring antibodies
1901	ABO	H, A1A2, B	Always present
1926	MNSs	M, N, S, s	
1926	P	Pl, p	Sometimes present.
1940	Rh	Rh(D), C, E, c, e.	
1945	Luthran (Lu)	LU ^a , LU ^b	
1946	Kell	K, k, kp ^a , kp ^b , kp ^c Js ^a , Js ^b	
1946	Lewis (le)	Le ^a , Le ^b	Sometimes present.
1950	Duffy (Fy)	Fy ^a , Fy ^b	
1951	Kidd (jk)	Jk ^a , Jk ^b	
1955	Diego (Di)	Di ^a , Di ^b	
1956	Cartwright (Yt)	Yt ^a , Yt ^b	
1962	Xg	Xg ^a	
1965	Dombrock (Do)	Do ^a , Do ^b	
1967	Cotton (Co)	Co ^a , Co ^b	
1974	Scianna (Sc)	Sc1, Sc2	

In recent years, the concept of universal donors and universal recipients is modified. Thus, rare cases of haemolytic reactions have been found to be due to the "universal donors" whose plasma either contained immune antibodies (Haemolysins). (Commonly seen in persons who have received injections of TAB vaccine, tetanus toxoid or horse serum or persons transfused with incompatible ABO blood group or in pregnancy where the blood group of mother is "O" and the blood group of baby is either "A" or "B"). Or anti A and anti B agglutinins in high titre. These donors are known as the "dangerous universal donors".

Transfusion reactions may occur in group "AB" subjects when transfused with group "A", group "B" or group "O" containing a high titre of anti-A or anti-B. Thus the term "Universal recipient" is best avoided, and patients of group AB should be transfused with group AB blood.

Of the fatal haemolytic reactions reported in U.S.A over a three year period, most of the reactions were immediate in type, of these 75% were due to ABO incompatibility and the rest were due to a variety of other antigens like Rh and other minor groups like Kell, and Duffy (2,3).

The present study has been carried out to evaluate the distribution of blood groups in this part of the country and to establish the reference value.

Materials and Methods

One thousand and thirty nine volunteers were selected for this study who were well aware of the objectives of the study and willingly participated. These volunteers were selected from the Peoples Medical College Nawabshah (only male volunteers) and a few private clinics in Mirpur Khas which included subjects of both sexes.

Collection of specimens

Two mls of venous blood was drawn from each individual, transferred to the glass tubes containing EDTA. ABO grouping and RH grouping was done according to the technique of Dacie and Lewis.(4)

Results

Results are given in four different tables. Table-2 shows the frequency of ABO blood and RH factor in the female volunteers belonging to the Peoples Medical College, Nawabshah. Out of two

Table 2: Distribution of ABO and Rh blood groups in the students of Peoples Medical College Nawabshah. (n = 247)

Blood Group	Rh Positive		Rh Negative		Total	
	No: of cases	Percentage	No: of cases	Percentage	No: of cases	Percentage
A	56	22.67%	2	0.81%	58	23.48%
B	71	28.75%	3	1.21%	74	29.89%
O	97	39.28%	3	1.21%	100	40.40%
AB	14	5.67%	1	0.41%	15	6.06%
Total	238	96.4%	9	3.6%	247	100%

Table 3: Distribution of ABO and Rh blood groups in the Volunteers at Thaparkar Blood Donor's Association Mirpurkhas. (n = 492)

Blood Group	Rh Positive		Rh Negative		Total	
	No: of cases	Percentage	No: of cases	Percentage	No: of cases	Percentage
A	118	23.98%	8	1.63%	126	25.61%
B	150	30.50%	8	1.63%	158	32.12%
O	144	29.28%	7	1.42%	151	30.70%
AB	57	11.59%	0	0	57	11.59%
Total	469	95.35%	23	4.65%	492	100%

hundreds and forty seven female students, the most prevalent blood group was "O" positive with a frequency of 39.28%. The distribution of the rest of the blood group and Rh factor is shown in the table.

Table 3 shows the distribution of ABO blood groups and Rh factor in the volunteers at Thaparkar blood donors association Mirpurkhas. (All the volunteers are male).

Table 4 shows the distribution of ABO and Rh blood grouping in the volunteers from the private clinics of Mirpur Khas. (Volunteers are male and female).

While the Table 5 shows the frequency of ABO & Rh groups in all the 1039 volunteers studied.

Table 4: Distribution of ABO and Rh blood groups in the patients and their own donor volunteers at Private Clinics, Mirpurkhas. (n = 300)

Blood group	Rh Positive				Rh Negative				Total Negative			
	Male	%age	Female	%age	Male	%age	Female	%age	Male	%age	Female	%age
A	60	19.99%	9	2.97%	69	22.77%	3	0.99%	63	20.89%	9	2.97%
B	66	21.78%	14	4.62%	80	26.4%	4	1.20%	70	23.1%	14	4.62%
O	118	38.94%	3	0.99%	121	39.93%	2	0.66%	121	39.93%	5	1.65%
AB	2	0.66%	16	5.28%	18	5.94%	0	0%	0	0%	16	5.28%
Total	246	81.99%	42	13.86%	288	95.04%	10	3.3%	256	84.48%	44	14.52%

Table 5: Distribution of ABO and Rh groups in all the Volunteers included in the study.

Blood groups	Rh Positive				Rh Negative				Total group			
	Male	%age	Female	%age	Male	%age	Female	%age	Male	%age	Female	%age
A	178	17.13%	65	6.25%	243	23.38%	11	1.06%	189	18.19%	67	6.44%
B	216	20.79%	85	8.18%	301	28.97%	12	1.15%	228	21.94%	88	8.47%
O	262	25.20%	100	9.62%	362	34.84%	10	0.96%	272	26.18%	105	10.10%
AB	59	5.67%	30	2.88%	89	8.56%	0	0%	59	5.67%	31	2.98%
Total	715	68.81%	280	26.95%	995	95.76%	33	3.17%	748	72%	291	28%

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JOB STRESS IN PUNJAB UNIVERSITY TEACHER

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Summary

The study was conducted in a sample of 150 Punjab University Teachers. Data was collected by means of a structured questionnaire to examine the relationship of job stress with psychosomatic health problem, religiosity, exercise and happiness in life and exercise. Religiosity and exercise were found to be an important moderator of the stress outcome relationship. Where both husband and wife were working the level of stress was reported lower than those where one member was earning.

Introduction

Job stress has been admitted as one of the important occupational health hazards of modern life. Stress exists when adaptive capacity of the individual is overwhelmed by events. The event may be an insignificant one objectively considered and sometime even favourable changes like promotion and transfer requiring adaptive behaviour can produce stress. For each individual stress is subjectively defined and response to stress is a function of each person's personality and physiologic endowment [1]

The cause of stress are different at different ages and change with need and requirement at different stages of life.

The patient undergoing operation, the surgeon operating, the anaesthetist giving anaesthesia and the relations of patient waiting outside, they are all under stress. The sources of stress pay a negative impact on the teacher's ability to form spontaneous and comfortable relationships with students, colleagues, and to decrease their emotional involvement in their own family [2] It is difficult to make the connections between work, stress and health, because workers bring some of their physical problems with them to job. But it is established that working conditions can intensify a variety of health problems. An individual may react to stress by becoming anxious or depressed, by developing a physical symptom, by running away, by having a drink or taking some anxiolytic or sedative or in a limitless way. Common subjective responses are fear (of repetition of the stress inducing events), rage (at frustration), guilt (over

aggressive impulses), and shame (over helplessness).

Acute and reactive stress may be manifested by restlessness, irritability, fatigue, increased startle reaction and feeling of tension. Inability to concentrate, sleep disturbances and somatic pre-occupations often lead to self-medication, most commonly with alcohol or other central nervous system depressants. Maladaptive behavior to stress called adjustment disorders [3].

Stress gives physicians a new approach to the treatment of illness, but it can also give us all a new way of life, a new philosophy to guide our actions in conformity with natural laws. Stress is not a non-specific reaction. The pattern of stress reaction is very specific. It affects certain organs (i.e. adrenal, the thymus and the gastrointestinal) in highly selective manner [4].

Various physiological reactions prepare us dealing with emergency situation. The heart rate increases, the blood pressure especially systolic rises and muscles are tense. When these reactions are chronically triggered and the person is constantly "on alert" there is a greater chance of developing one or more of various psychophysiological disorders like coronary heart disease, peptic ulcer, ulcerative colitis and severe headache.

Rice lists the following psychological symptoms of job stress: anxiety, tension, confusion and irritability; feeling of frustration, anger and resentment, emotional-cloudiness, hypersensitivity and hyperactivity, suppression of feeling; reduced effectiveness in communication, withdrawal and depression; feeling of isolation and alienation;

boredom and job dissatisfaction mental fatigue and lower intellectual functioning; loss of concentration loss of spontaneity and creativity; a lowered self esteem [5].

Doctors Friedman and Rosenman, [6] defined Type A Behaviour pattern as an "action emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time and if required to do so against the opposing efforts of other things or other persons."

Type A personalities are contrasted with Type B personalities who only rarely have a sense of time urgency and that only on relation to work, have no free floating anxiety and no need to speed up things.

The study also showed the relationship of job stress and type A behaviour with university teachers well-being in a sample of 150 full time teachers employed in the University of the Punjab, Lahore.

Materials and Methods

Data was collected from the Punjab University teachers by means of a structured questioner. 150 completely filled questionnaires were received back.

Job stress was assessed with a fifty four items scale developed by P.L. Rice [7] with necessary modification according to our need and environment.

Psychosomatic health problems were assessed by adopting measures from Michigan studies of employees health problems [8] Happiness in life was assessed with behaviourally anchored type square developed by Fordyce [9] with certain modifications.

Religiosity was assessed by asking respondents to tell the number of prayers with or without jamaat and offering Tahajed etc. Type A behavior was assessed by Bortner Scale [10]

Absence behaviour was assessed by asking the respondents to report the frequency of absence from the job during the last 2 months. High score on this measure indicated a higher degree of absence behaviour.

Results

The total number of respondents were divided into 4 groups. 26.66%(40) were in age group 26-35 years, 48% (72) were in age group 36-45 years,

24%(36) were in 46-55 years and only 01.34% (2) were in age group 56 and above.

50 (33.34%) respondents were in Ph.D. group while 16 (10.66%) were in M.Phil group and remaining 84 (56%) were having master degree in different subjects (Science, Arts and Commerce)

119(79.33%) teachers were male.

122(81.34%) respondents were married.

106 out of 122 married respondents were having children and 16 respondent were issue-less.

66 (54.09%) out of 122 respondents both husband and wife were working.

72 (48%) respondents were going for morning walk or doing exercise regularly.

88 (58.67%) respondents offer prayers regularly and only 54 out of 88 with jamaat.

32% (48) respondents remained regular during last 2 month and 2.60 (8) were absent from duty 4-8 times in last 2 months.

Table 1. Stress among Respondents

Level of Stress	Frequency	Percentage
Low	23	15.34%
Normal	80	53.33%
High	47	31.33%
Total	150	100%

The table shows 23 (15.34%) respondents are suffering from low stress and 47 (31.33%) are suffering from high stress while remaining 80 (53.33%) respondents are in normal range of stress.

Table 2. Stress in Genders

Sex	Male	Female	Male%	Female%
Low	20	3	16.80	16.45
Normal	59	21	49.58	67.74
High	40	7	33.62	22.58
Total	119	31	100	100

- The table shows that 33.62% male are under high stress while only 22.58% of female respondents are under high stress. This indicates that relatively of males are suffering more from stress.
- The result of the data have proved the relationship between job stress and happiness in life. In this association our calculated value (tc) 0.364 was less than the tabulated value (tt) 1.980 of N-150 level of significance of 1 degree freedom was .05 So job stress is negatively related to happiness in life.
- We assumed that job stress is positively related to psychosomatic health problems, and in the analysis of data we observed that our calculated value (tc) = 0.158 was less than the tabulated value (tt) = 1.980 at 0.05 degree of freedom, therefore we concluded that variables are positively related to each other. We supposed that "type A behaviour will be an important moderator of stress" and results showed that both are positively related to each other. Moreover, the results of the data proved that most of the Type "A" personalities had more psychosomatic health problems than Type "B".

Table 3. Prayers

Responses	Frequency	Percentage
Yes	88	58.67%
No	62	71.33%
Total	150	100%

Table 4. Prayers with Jamaat

Responses	Frequency	Percentage
Yes	54	36%
No	88	58.66%
Some times	8	5.33%
Total	150	100%

Table 5. Tahajjad Prayer

Responses	Frequency	Percentage
Yes	6	4.00%
No	129	86 %
Some times	15	10%
Total	150	100%

It has been observed from the results that the teachers who are having very low degree of job stress almost all of them are regular in offering their prayers with Jammata and 4% were offering Tahajjad prayer regularly. The teachers having lesser level of job stress majority of them were also regular in offering their prayers.

In the above two variables (prayers and Tahajjad prayers) we found that our calculated value (TC) 0.445 was less than the tabulated value (Lt) i.e. 1.980.

Table 6. Habitual of Regular Morning Walk

Responses	Frequency	Percentage
Yes	52	34.66%
No	98	65.34%
Total	150	100%

Habit of exercise and morning walk was also found to be an important moderator of stress and psychosomatic health problems. These percentage indicate that these teachers were having lesser degree of job stress than those not doing any exercise or going for morning walk at all.

Discussion

Presently job stress is on the increase in Pakistan. This generation is facing more and more causes of stress than the previous one. Pre-disposing factors of stress like, taxes, price hikes, children schooling, examination system, political

unrest, thefts/decoits, feeling of insecurity, environmental pollution, family problems, future security of family and traffic hazards are there which every Pakistani is facing. These factors trigger the effects of occupational stress and thus lead to various psycho-physiological disorders of health. The university teachers living in same environment are no exception. The results of the study indicated that the job stress is negatively related to general happiness in life and positively related to psychosomatic health problems among university teachers. These findings are in complete agreement with the bulk of existing literature on work stress.

The finding that job stress is related to psychosomatic health problems are consistently reported in the occupational stress literature [11]. In a study of physicians and Nurses [12] it was found that measures of job stress were significantly related to psychosomatic disorders and coronary disease risk. In a study of social workers it was [13] found that job stress and four stressors (role ambiguity, over-load, conflict and resource inadequacy) were positively related to psychosomatic health problems.

In conclusion, the finding of the present study in conjunction with other studies presents rather unhappy picture of type A employees. They personally experience even the less adverse consequences of job stress more severely than other employees.

A more careful selection and placement of Type A individuals is required at the time of job-assignment. A systematic programme of informing Type A's about the personal and health dangers they may encounter in their work environment may prove useful. A regular auditing of employees health, especially of Type A individuals may be necessary to detect early symptoms of job-stress.

Very interesting findings of the study is the religiosity which is one of the buffer against stress. Those teachers who are regular in their prayers experience low and less level of stress than those who are less religious or irregular in offering prayers or offer no prayer at all. These teachers are contented with their jobs. Results of the study have verified that "Religiosity will be an important moderator of stress and outcome relationship will be less seriously affected from the adverse affect of job-stress than respondents with low religiosity in similar situation". In the above two variables, we

found that our calculated value (tc) 0.445 was less than the tabulated value (tt) i.e. 1.980.

Habit of exercise and morning walk was also found to be an important moderator of stress and Psychosomatic health problems.

The families having many children have more stress; it is found that respondents whose spouses do work have low level of stress i.e. poverty is also a significant stress in our society. Undoubtedly the relation to God, approach contact to God helps effectively to combat the stress. Periods of prayers and Ibadits help us to have detachment from stressful life. Our findings proved the time tested saying:

"Exercise and refuge in religion is the solution of stress and strain".

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