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The level and the quality of papers in the journal has improved greatly. In addition we are receiving contributions from most countries in the region and from all over the world. In this issue the papers deal with various topics from mental health to HIV infection to surgical management. An intervention study was carried out in Saudi Arabia to measure the effect of mental health training program on the ability of PHC physicians to detect and manage mental illnesses. The authors structured a course which ran over 4 days. A follow up was arranged to see the effect of training. The authors noted that a shorter-term mental health-training program didn't enable PHC physicians to detect minor mental health problems. Therefore they recommend an advanced and long-term mental health-training course focusing on the practical application of identifying mental illness among PHC patients.

A paper from Kuwait reported on local experience in the surgical management of post carbuncle soft tissue defect in diabetic patients. The author analyzed results of the treatment of 27 patients with a carbuncle of various locations. It was shown that both skin grafts and local flaps are good alternatives in the coverage of such defects. However skin flaps provide better cosmetic appearance than skin grafts.

A paper from Iraq looked at the impact of therapeutic doses of paracetamol on serum total antioxidant capacity (TAC) and malodialdehyde (MDA) levels were studied in asthmatic patients. A total of 43 asthmatic patients were enrolled in the study. Acetaminophen usage led to a significant reduction in FEV1 in asthmatic patients more than in the control group and asthmatic patients not receiving acetaminophen. The authors concluded, that acetaminophen usage leads to reduction in serum TAC and increase in lipid peroxidation and consequently this oxidative stress contributes to asthma progression and decrease in lung function. N-acetylcystine administration may restore these changes.

A review paper from Canada reports on the pre-participation evaluation of the athlete. The authors presented a synthesized pre-participation evaluation that identifies medical conditions that may limit participation, predispose to injury or illness, evaluate risky behaviors, counsel on health-related issues, and ideally evaluate fitness level and performance.

This is the fifth issue this year and it is a back to back issue with the June issue. A good variety of papers has been included. A paper from Palestine looked at the effect of allergy on an individual's quality of life and the extent to which it may restrict daily activities is often overlooked. The study sample consisted of around 1000 randomly selected students from all colleges of the University. Allergic rhinitis prevalence rate was 3.1%. The results confirmed the strong relationship of Allergic Rhinitis and respiratory infections and Asthma.

Low dose exposure to lead is a well-known risk factor for spontaneous abortion in pregnancy and neurological fetal damage may be encountered at blood lead levels (BLL) as low as 5- 10 µg/dl. A study from Iraq evaluated the problem of lead exposure among (306) non-pregnant women in childbearing age in the city of Mosul and investigated the possible association with certain socio- demographic and household characteristics. The study revealed that lead exposure is still an important public health problem in Mosul City and the major predictors for high BLL(s) include the location of the household in relation to traffic density and home characteristics namely age of home and/ or presence of chipping paint.

The etiological agents of Mastitis in Lactating Women in Iran was studied in a number of 203 milk samples taken from puerperal women hospitalized in Tehran. Their finding showed that Staphylococcus aureus and Coagulase negative Staphylococcus were the major etiological agents of Mastitis in Iranian Women.

A random controlled clinical trial was conducted to quantify the effect of coded herbal formulation SCAT with Qurs Bukhareen, Qurs Humma Jadeed and Amodiaquine at endemic area of Bund Murad near Hamdard University, Karachi and the urban population of Karachi. The statistical analysis through chi-square test ($p< 0.05$) significantly proved the SCAT efficacy. From the statistical analysis of all the variables it was conclusively proved that SCAT has furnished overall good efficacy, more suitable and superior for the prevention and treatment of malaria. The clinical data generated, clearly proved that SCAT is the drug of choice for malaria especially caused by Plasmodium vivax and Plasmodium falciparum.

Prospective randomized controlled trial to assess the effectiveness of antibiotic treatment of women with symptoms of urinary tract infection but negative urine dipstick testing was carried out in Jordan. The authors concluded that although negative dipstick test accurately predicted absence of infection when standard microbiological definition was used (negative predictive value 92%), it did not predict response to antibiotic treatment.

A review from Saudia Arabia highlighted the importance of continuous, flexible and practical form of medical education. The studies demonstrated that there is a very weak effect of formal CME activities on physician's performance depending upon the methods of those activities . The authors suggested that learning should not be bound in boundaries and it should be continuous, flexible and practical (Continuous Professional Development-CPD), allowing physicians to choose from a menu of learning formats after having identified which style best suits them.

A Cross-sectional survey about expectations and satisfaction of patients was carried out using a questionnaire in Bangladesh. The authors revealed that 60% of patients were satisfied with the service provided. The study reveals useful information that will help physicians in Bangladesh as well as in the region to be more patient friendly.

The paper for Focus on quality care, is about a better community based education program in Iraq. The author defined community based education as a mean of implementing a community oriented learning program (which is the type of training that focuses on both population group and individuals taking into consideration community health needs) that consist as defined by (WHO -1987) of learning activities that take place within the community where students, teachers members of community and other sectors engage actively through this educational experience, i.e. the learning activities that take place in particular and community settings.

Towards Quality and Accreditation in Health Professions Education in Iraq - Accreditation in Health Professions Education

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Abstract

The health professions in Iraq in general include physicians, dentists, pharmacists, nurses and lab technicians. The documents prevail that the already existing health system is based on curative side and shifted toward hospital orientation. The total number of health centers in Iraq according to the latest reports prevail the presence of 1285 health centers among which only 50% have a health professional. There are 20 colleges of medicine in Iraq, seven colleges of nursing, 10 colleges of dentistry and 8 colleges of pharmacy in addition to 6 technical colleges and 20 colleges of sciences which take the responsibility for supporting health care services and delivery. We are in great need to reform our health professional education through following the global standards toward unity of agreed standards. Tikrit college of medicine has followed since 1987, competency based education programs/problem based learning. This paper provides a comparison to evaluate Iraq's experience against global standards. The WFME recommends the following set of global standards in basic medical education. The standards are structured according to 9 areas with a total of 36 sub-areas. The TUCOM (Tikrit University College of Medicine) was established many years before the production of the WFME standards (1988). Nevertheless, it is a valuable exercise to compare and evaluate the college's performance against these global benchmarks.

1. Mission and Objectives

1.1 STATEMENTS OF MISSION AND OBJECTIVES

In the self-study of TUCOM the statement of mission was not adequately addressed. Looking into the main curriculum document, it appears that a statement of mission does exist however; however the self-study has ignored it. As for the institutional objectives TUCOM has 5 clearly stated objectives, addressing 5 main issues. These are:

- Role of the college in improving the health of the targeted population,
- Preparation of competent and responsive graduates to manage individual, family, and community health problems
- Adoption of educational program focusing on priority and primary health care
- Adoption of life-long learning and assessment strategies.
- Focusing on population health

The self-study concentrated only on the educational objectives and ignored other institutional objectives like role in research, providing services, social accountability and contributing to professional development. Aldabbagh (2003)

Suggestion: the ignored areas should be revisited and well addressed

1.2 PARTICIPATION IN FORMULATION OF MISSION AND OBJECTIVES

The self-study mentioned the participation of a few stakeholders who participated in the formulation of mission and objectives. These included university authorities, international organizations and staff from the Ministry of Health. However, the study ignored the contribution of important stakeholders like: community leaders, students and professional organizations.

Suggestion: As part of a routine periodic revision all stakeholders are to be approached and actively involved

1.3 ACADEMIC AUTONOMY

Medical education in Iraq is totally run under the patronage of the ministry of higher education and scientific research. The medical school is almost totally funded by two types of governmental budgets; a yearly regular budget and a project-based developmental budget. Both budgets are granted according to a request from the college based on real needs and future projection. All academic departments and centers participate in such an exercise based on the requirement of implementing the curriculum. Once the budget is granted the college authority is autonomous in distributing and spending the allocations according to priorities. However such an arrangement depends on the financial status of the government revenues and budgets could vary accordingly. In recent years, TUCOM as well as all other medical schools in Iraq started to compete in attracting foreign students to be enrolled against paying tuition fees in hard currencies. The greater part of such income is used by the college for developmental purposes. (TUCOM curriculum document)

Suggestion: Accordingly TUCOM should make the best of its innovative educational program to attract more funds.

1.4 EDUCATIONAL OUTCOME

The competencies at graduation are clearly defined in the TUCOM curriculum document. The level of performance of these competencies at graduation are closely related to the job description for the two years foundation residency program that each graduate should pass before being allowed to start any kind of practice and postgraduate training. It is also unique to note that the competencies include all those required by a general practitioner with emphases on primary health care and family medicine in addition to all other clinical disciplines.

Suggestion: In future revisions of educational program, the graduates' competencies should be revisited to align with the new development in professional practice and health system development including postgraduate training schemes.

2. Educational Programme

2.1 CURRICULUM MODELS AND INSTRUCTIONAL METHODS

TUCOM is the first medical school in Iraq to introduce problem-based learning curriculum and still the only one among the 19 operating medical schools at the present time.

The curriculum document clearly defines and describes the learning strategies based on the following characteristics (TUCOM document)

- Community oriented program responding to priority health needs.
- Full integration of subjects and disciplines at both horizontal and vertical levels
- Students-centered learning
- Curriculum is divided into 3 phases : healthy life, pathogenesis and clinical and primary care clerkship
- Organ-system modules.
- Self-learning strategies and assignments.
- Competency-based students' assessment.
- Community-based training in and outside college campus.

Suggestion: In future revisions the problem-based learning methodologies should be modernized to match the new developments in learning strategies including the case presentation curriculum (CPC) with the use of clinical flow charts and scripts. Meanwhile, new advances in e-learning should also be considered

2.2 SCIENTIFIC METHOD

The program adopted by TUCOM is based on analysis of common problems. Also the six years program contains a curricular research project assignment in 4 years (years 2-5) where groups of student learn by doing scientific thinking and research methodology that usually has each project ending in producing a scientific, publishable article.

Suggestion: An in-depth evaluation of the program is needed to identify strengths and weaknesses.

2.3 BASIC BIOMEDICAL SCIENCES

The first 3 years of the program are devoted to address basic medical sciences in integrated modules, based on health problems. It is usually claimed by opponents of the PBL program that graduates of such program are somehow deficient in basic knowledge. However several research studies showed that PBL graduates are better in applying knowledge in their professional practice.

Suggestion: Further studies are needed to examine this issue.

2.4 BEHAVIOURAL AND SOCIAL SCIENCES AND MEDICAL ETHICS

The curriculum document does not show clearly separate modules on behavioral sciences. It is apparent that such elements are deeply embedded within the whole curriculum. For example the weekly student self-evaluation and group peer evaluation are based on behavioral performance of students. Such exercise provides students with actual practicing of behavioral and ethical issues.

Suggestion: A comprehensive analysis of the curriculum is needed to identify the behavioural and ethical practices experienced by the students during their 6 years of the study and to add what would be seen as missing elements.

2.5 CLINICAL SCIENCES AND SKILLS

The students are given the opportunity to get in contact with the community including patients as early as the first week of the program. In addition all training in hospitals, primary health care centers and community setting is done from a systematic and pre determined list with clear students' objectives and tasks. However, many of the clinical teachers go beyond the schedule training to concentrate on their personal interests.

Suggestion: Strict supervision and monitoring of students training outside teaching facilities under the control of the college is needed to ensure systematic training with full use of standard operation procedures (SOPs) and checklists.

2.6 CURRICULUM STRUCTURE, COMPOSITION AND DURATION

The six year curriculum follows the natural history of health and disease. It starts with promotive and protective health and passes through the stage of early detection of disease and the history of pathogenesis to prepare the student for the interventional stage of diagnosing, managing and rehabilitating individuals, families and communities. During all these stages special emphasis is made on community priority health problems and targeting the state of population wellbeing.

Suggestion: As population health is dynamic by its nature, new challenges are to be periodically followed up and to be incorporated into the curriculum on regular bases.

2.7 PROGRAMME MANAGEMENT

In TUCOM the curriculum committee and its structural curriculum unit is headed by the dean. In addition to secretary and administrative staff, the committee is composed of members representing different academic departments and the coordinators of each year. The committee is responsible for managing all the learning and student assessment activities. Departments are only responsible for teaching and training of students according to the schedules and time-tables organized and supervised by the curriculum committee.

Suggestion: Continuous evaluation of the work of the committee is needed to ensure efficiency and effectiveness.

3. Assessment of Students

3.1 ASSESSMENT METHODS

Students' learning outcome is to be measured using two strategies. Formative assessment is used for feedback and continuous development. Students are verbally fed-back at the end of every week during the face-to-face peer and tutor evaluation at the end of each problem. At the same interval, each student reports on the week's learning achievement. The report is reviewed by tutor and written feedback is provided and discussed if necessary. The second strategy is the summative method for scoring, passing and ranking.

First, Continuous assessment (10%): This assessment takes place during almost all learning activities in the form of quizzes, peer evaluation (negative marking only), reporting, attitude, tasks during field, practical and clinical sessions.

Secondly, End-of-Block Assessment: At the end of each block, there is one integrated MCQ paper (10%) and a 10-15 stationed OSCE (10%).

Final Assessment at the end of the year, a grand block/ subject is assessed through assessing two blocks together using an integrated single paper of MCQ (20%) and an integrated

OSCE (20%). So, final marks for each subject are calculated as Continuous Assessment in 2 blocks (10%x2) + End -of-Block Assessment (20%x2) + Final Assessment (40%) = 100%.The criteria for passing any part of the assessment is to score at least 50%. All assessments are organized and conducted by the curriculum committee and in collaboration with the concerned department. Accordingly the test questions are evaluated before and after the test and students are given a feedback.(TUCOM curriculum document)

Suggestion: New technologies should be looked for to enhance and ensure validity, reliability and objectivity of the test.

3.2 RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING

The aim of assessment is to be always based on the educational objectives. Teachers and trainers are asked to submit several questions and training tests based on the specific objectives they followed during teaching and training. The curriculum committee will evaluate the material submitted and choose the final sets to be administered for the students' assessments. All tests, theoretical and practical, are based on sets of integrated subjects. However, during the last few years several teachers in different departments started to administer subject based guises and mini-tests.

Suggestion: Strengthening of the integrated assessment is of a high priority to maintain and ensure a close relationship between assessment and learning objectives.

4. Students

4.1 ADMISSION POLICY AND SELECTION

The policy for admission to higher education institutes is uniform for all institutes in Iraq. This policy is based on competitive application for enrollment in different colleges based on demand and number of seats. The major criteria are the academic scoring in the secondary school final examination after 12 years schooling. However, enrollment in medical schools in particular is conditioned on passing a special interview selection by a special committee headed by the dean to ensure characteristics other than the academic record. The role of this exercise is unfortunately a limited one.

Suggestion: New and decisive role should be given to the interview plus introduction of new psychological and social tests.

4.2 STUDENT INTAKE

Students' intake is decided annually by the ministry of higher education and scientific research and is tied to the national need, as submitted by the ministry of health. In general terms, not all capacities at the college are seriously considered. The college is usually consulted on the already decided number of the student intake and an approximate number is compromised between the different colleges so that the total national number of intake is made.

Suggestion: Exact number of intake in the college is to be determined and maintained, according to the real capacity and size of teaching and training opportunities available.

4.3 STUDENT SUPPORT AND COUNSELLING

Limited support and counseling is available as part of a national policy. Some support is provided in respect of housing, transport and cafeteria services. Social and psychological counseling is unavailable.

Suggestion: This important aspect of support to the students should be seriously considered. Also, financial support and grants should be extended to cover students with distinction as was done prior to 2003.

4.4 STUDENT REPRESENTATION

In TUCOM the student union is active in several ways. Each year the central committee is formed of two representatives from each year, freely elected by all students. One representative of students is present as a member in the college council and one in each department council. In addition the student union establishes each year several committees in different activities in arts, athletics, poetry, literature and other non-curricular activities.

Suggestion: Such activities need to be supported financially, logistically, and morally.

5. Academic Staff/Faculty

5.1 RECRUITMENT POLICY

A central policy exists at the national level. However, eligible staff can choose to submit their application to each medical college and will be considered according to their qualification and experience. Each application will be considered by the college according to the vacancies available and approval of university and ministry of higher education authority.

Suggestion: Provided that scientific criteria is met, the college should have a policy to be given the right and authority, to recruit the needed staff and decide the appropriate salary and motivation without submitting the application for approval by the university and the ministry.

5.2 STAFF POLICY AND DEVELOPMENT

As part of career development, each member of staff should pass a course in principles of medical education during the first two years of service. In order to be promoted to the title of professorship, staff members should pass through three stages of promotion with certain criteria to be met, including teaching, research and service, with annual appraisal.

Suggestion: Because of the shortage of qualified candidates willing to work in the medical college, the ratio of teachers to students varies from one department to another. Salary scale and motivations should be reconsidered to encourage qualified people to work in different departments of the college. Also incentives should be given to encourage attracting qualified staff from the ministry of health to train medical students.

6. Educational Resources

6.1 PHYSICAL FACILITIES

The learning, training and teaching activities are conducted in two places:

1. Inside college campus, includes:

- Lecture halls, small group face to face discussion rooms.

- Practical laboratories.
- Skills laboratories.
- Computer laboratories.
- Computer-Assisted Interactive Learning Laboratory.
- Audio-Visual laboratory.
- Library.
- Teacher-Student contact.

2. Outside college campus and includes: Tikrit teaching hospital, primary health care centers and other community settings.

Suggestion: The learning environment for the students should be improved by regular updating and extension of the facilities to match developments in educational practices.

6.2 CLINICAL TRAINING RESOURCES

Basic standard:

The medical school must ensure adequate clinical experience and the necessary resources, including sufficient patients and clinical training facilities.

420-bed Tikrit General Teaching Hospital belonging to Ministry of Health. Primary Health Care Centers in Tikrit City (3 in number) and in Tikrit suburbs and rural surroundings (4 in number). Community settings including both urban and rural housing. Other settings including schools, factories, farms and clubs.

Suggestion: Students should be provided with support to get training outside Tikrit, for example in Baghdad specialized hospitals.

6.3 INFORMATION TECHNOLOGY

The computer interactive lab provides excellent opportunities for students and staff to use simulated training programs and internet connection.

Suggestion: To update and to increase the number and improve the quality of the information technology facilities at regular periodic bases.

6.4 RESEARCH

TUCOM is the only medical school in Iraq that adopts a curricular research program extending over four years (years 2,3,4,5). Groups of students plan, choose topics, implement, data collect and analyze, discuss and write a publishable field interventional research. Each year this curricular research is presented by the students in front of an examining committee with a continuous appraisal and scoring by a faculty staff supervisor. The resulting overall score system has a pass or fail mark for each student.

Suggestion: Continuous monitoring and evaluation of all projects by the supervising committee is needed.

6.5 EDUCATIONAL EXPERTISE

The college employs an educationalist who acts as a member and adviser to the medical education unit in the college. The unit plans, implements and evaluates the medical education activities. These activities include a weekly journal club on medical education, staff development workshops (at least one a year) and publication of research on medical education.

Suggestion: Activities and publications related to medical education need to be more encouraged and motivated. Research in medical education should be treated in a similar way to scientific and clinical research in the process of promotion.

7. Programme Evaluation

7.1 MECHANISMS FOR PROGRAMME EVALUATION

The curriculum includes a strategy to evaluate the programme through the following activities (internal and external):

1. End-of-block evaluation where the Block Committee meets and evaluates the performance and reports back to the Educational Development Committee chaired by the dean.
2. Tutors report back evaluation remarks to the Block Committee at the end of each week.
3. The College Council discusses educational events with evaluations under a fixed item of agenda.
4. Year Committee evaluates problems and performance at the end of each year and feedback to the Educational Development Committee.
5. External evaluation by invited experts from outside the college. The college, for example, was visited several times by the late Professor Jacobus Greep (Maastricht), Late Professor Zohair Nooman (Suez Canal), Professor Othman K. Othman (Gezira), Professor Wagdi Talaat and others.
6. The college organizes workshops for evaluation and performance improvement.
7. The staff are encouraged to conduct research to evaluate educational process and outcomes for publication in journals and in a special serial document every 5 years entitled "Programme Evaluation Studies" (TUCOM, 2000).
8. The Educational Development Committee regularly conducts studies to evaluate graduates (Alsheikh et al 1999). (TUCOM.) (2000)

Suggestion: Program evaluation should always and periodically, be revisited and generated to ensure new blood in the life of the college

7.2 TEACHER AND STUDENT FEEDBACK

Teacher annual appraisal is done in two ways; firstly through the supervisor and secondly through students. Feedback from both is given to the teacher on the one hand and to the medical education unit and college council on the other hand.

Suggestion: Expansion of the process of feedback needs to be elaborated

7.3 STUDENT PERFORMANCE

Student performance is poorly dealt with.

Suggestion: This is a very important subject that needs attention as it leads to significant results

7.4 INVOLVEMENT OF STAKEHOLDERS

This is poorly dealt with as program evaluation is only sent to the university and the ministry of higher education.

Suggestion: To be seriously revisited.

8. Governance and Administration

8.1 GOVERNANCE

The governance of the college is well documented by law and roles

8.2 ACADEMIC LEADERSHIP

The dean leads the college activities and chairs the medical education committee and unit and college council with clear authority, delegation and job description of heads of departments and members of committees.

8.3 EDUCATIONAL BUDGET AND RESOURCE ALLOCATION

The total budget of the college is allocated according to uniform chapters including clear parts devoted for education.

8.4 ADMINISTRATIVE STAFF AND MANAGEMENT

The college is regarded by law as an independent administrative entity headed by the dean and other senior managers. The educational process is at the top of the college priorities.

Suggestion: The administrative staff should be motivated and link to educational achievements.

8.5 INTERACTION WITH HEALTH SECTOR

This is a very important aspect. TUCOM is very closely related to ministry of health for example:

- Dean is member of the national health planning board chaired by the minister of health
- Chief medical officer of the governorate is a vice chairman of the college council
- Dean is vice chairman of the governorate board of health care facilities
- Dean is chairman of the governorate board of continuing professional development (CPD).
- All training of students takes place in health facilities belonging to the ministry of health.

9. Continuous Renewal

The college performs a comprehensive program evaluation every five years. Both external and internal experts participate in this exercise. A special document is produced on such occasion. In addition, the ministry of higher education conducts an annual performance evaluation for the college covering inputs, process, and outputs. According to the result of this annual appraisal all colleges of higher education are ranked according to specialty and the first three colleges in each profession is declared and awarded a certificate of excellence.

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Toward a better community based education program in Iraq

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Community based education is defined as a means of implementing community oriented learning programs (which is the type of training that focuses on both population groups and individuals taking into consideration community health needs) as defined by (WHO -1987) which consists of learning activities that take place within the community where students, teachers, members of the community and other sectors are engaged actively through this educational experience, i.e the learning activities that take place in particular community settings.

These activities may or may not be relevant to community health needs as the curriculum can be community oriented without being community based. On the other hand we can have a community-based curriculum without being community oriented. Our college has tried since establishment, to implement relevant curriculum, which is both community oriented as well as community based.

TUCOM (Tikrit University College of medicine)/CBE program (in its ideal times) constitutes a community based curriculum including an acceptable balance of community based activities throughout the duration of educational settings (6 years of study).

The curriculum of TUCOM constitutes community-based settings for 2 days/week (field work) under supervision for the 1st, 2nd and 3rd years, in addition to community projects for the 2nd and 3rd year. Training is done in small groups throughout the academic year in coordination with the theoretical knowledge they gain at college.

Training is not limited to PHC centers, but extends through a detailed scheduled plan to include schools, kindergartens, communicable disease centers, factories (mainly in the 4th year) and family visits.

The main objectives of field work are to give students contact with relevant community heath problems, systems of health care at different levels, units of PHC, how to take proper medical histories from healthy people, acquisition of essential medical skills, geographical and demographical characteristic factors of community, scientific analysis of health problems and team work with other members and health staff.

The 4th year curriculum is based on community settings through this year. The activities include problem solving, lectures and clinical training related to the following topics which include medicine, surgery, pediatrics, community medicine (including environmental and occupational health), basic and behavioral sciences.

The settings are connected and implemented in the primary health care center (PHC) which is mainly Al Razi health center, in addition to the outpatient clinic in Tikrit teaching hospital (which is a general hospital including the main departments of medicine, surgery, pediatrics and gynecology departments, family medicine and family planning centers) in addition to occupational sites, in addition to a community project at the end of the academic year.

The 5th year constitutes 2 days/week work in PHC (and other sites), while the rest will be spent in outpatient and hospital wards. (Field projects are necessary at the end of the academic year).

6th year constitutes an 11 week/course including 2 days (ideal) in PHC and the rest spent in hospital wards, theatre, emergency and outpatient clinics of the teaching hospital.

Field Project

The general and specific objectives are based mainly on community health needs and priority relevance. The program tries to adopt HFA goals (adhering to the values of quality, equity, relevance and cost effectiveness and maintaining a balance among them) through PHC commitment.

The activities are related to well planned educational goals and objectives and are introduced throughout the whole educational program.

The training is done appropriately and in an acceptable balance covering the primary, secondary and tertiary health centers, as it is focused mainly on the community rather than the teaching hospital (this point is moot now and, the reliance is mainly shifting toward the hospital side not because of the current situation but mainly due to vague policies caused by lack of knowledge and beliefs. The training tries to make use of the available good resources in the community.

The main issue related to this CBE program is to graduate students with the ability and conviction to serve the community and handle community health needs through self confidence and problem-solving skills they gained as thus they will be able to evaluate and realize their strength and limitations.

The rationale behind TUCOM/ CBE program is mainly summarized in the following points:

- It will provide better future involvement of the newly graduated students in resolving health priority problems through proper linking of theoretical knowledge gained in the college (CBE) curriculum with associated proper practical training.
- Being PBL, application of CBE program provides better elaboration on in formation which will be better understood and processed as CBE facilitates PBL, providing more control on community health problems, with better chances to learn in an environment that is close to future real professional life in the community, in addition to the value of appreciation and recognition of team members' roles in sharing respect and understanding.
- This will provide the newly graduated students with a better sense of social responsibility and understanding of their community and its related factors.
- It will help to remove obstacles between the newly graduated students and community members and improve their assessment competencies including communications, management, ability to work in a team and leadership skills.
- The CBE program will ensure relevant educational processes that help students and new graduates to acquire the main competencies needed for better future professional performance (5 star doctor), including curative, promotive,

preventive, and research based competencies, besides other managerial and leadership skills.
- It will provide a multidisciplinary approach toward improving the quality of health services and health status, through achieving the concept of health for better physical, mental and social wellbeing.
- Being in more contact with community and political leaders it will provide more opportunities for partnership with the community, university and the government.
- It will help students and graduates to better recognize the relationship between risk factors, diseases and defense mechanisms and through better understanding of the natural history of disease.
- Finally CBE is bringing important contacts with important international organizations (e.g. WHO) and societies concerned with innovative education.

CBE program constitutes specific perspectives including ethical issues related to individual patient health care in respect to respecting peoples thoughts (autonomy), regardless of our personal philosophy, politics and religion; providing effective, relevant education and training to provide medical benefit with less harm; providing the chance for active involvement of the community and achieving justice in the form of equity and equality of health care services provision. It fosters appreciation and recognition of social characteristics through being exposed to community problems. It fosters recognition of people's rights and basic social services ate more guaranteed.

The other issue to be discussed here is classifying community-based programs. This issue is important for 2 reasons: firstly this will encourage a systematic approach to the study of CBE and secondly it helps in developing guidelines and improved implementation as stated by (Schmidt and Magzoub 2000).

There are 3 categories regarding the aspect of trying to differentiate the CBE program according to whether it is mainly a service oriented program which is found mainly in developing countries or if it is concerned with and further subdivided into community development and health intervention programs.

The services range from curative services in the primary care unit to broader aspects related to community mobilization. In health intervention it is concerned with mainly curative and preventive health services while if it is to be applied in community-based services, it needs more organization, more time and to be continuous and provide follow up for many years as it needs more active involvement and partnership between the different sectors.

The second approach is the research-oriented program which is found more in developed countries where both students and staff are involved in community health problem studies.

This type is further subdivided into community based and health facility based programs according to the site of research.

The third approach is the training focused program which focuses mainly on student training in their community whether on primary care, or other working environments, and is further subdivided into primary case based program where primary health care facilities are the proper places for training and community exposure program.

In regard to the TUCOM /CBE program, although many activities are shared in the various 3 categories, it is more shifted (for the last 4 years) toward the first category, focusing mainly on curative and preventive health services and with more approximation to the second subdivision, that is health intervention program.

All these activities are provided by TUCOM/CBE program with one obvious problem which is mainly related to lack of clear vision in implementation of this program, a defect mainly related to managers and authorized staff as they are losing faith in this program (lack of orientation) leading to confusion in implementation of the activities and educational objectives and intended learning outcomes.

Community Based Learning Activity (CBLA) is the activity that can take place in the community and/or in a variety of health service settings whether primary or secondary. (Tertiary care services cannot be included). This participation could be in the form of community surveys, community oriented programs, health education etc. m These communities include workplaces, families, social societies and schools. The following example is related to one of our CBL activities in TUCOM.

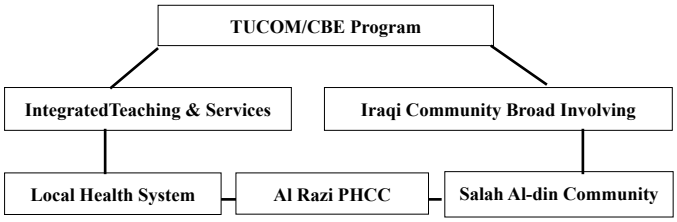
Community-Based Education / Learning Activity / year 5

Anemia in 1st year primary school/in Al Alam district/ Salahaldeen governorate.

Activities performed by the faculty:
- Seminar on Anemia in children: This seminar will cover the following branches (biochemistry, physiology, pathology, pediatrics and community medicine/school health services.
- Skill lab: Clinical examination of anemic child (signs and symptoms)
- Field work activities:
  a) Examination of 1st school children/350
  b) Suspected diagnosis (the indication for referral) through referral to field tutor.
  c) Referral to PHCC for necessary hematological examination as indicated.
  d) Analysis of the results (statistical analysis)
  e) Final reporting (presentation of data through tables, charts etc).

Faculty members will be responsible for providing and assessing the competencies of 5th year students regarding their knowledge, attitudes and practice performance through the clinical, written examination and the final report submitted. Many of the challenges TUCOM is facing regarding assessment are related to lack of observational methods, peer evaluation and attendance of students, which are only practiced by a few tutors. The intended plan is to build a triangular relationship between the academic college, health care system, including PHCC and the community. To fulfill these competencies and activities, we need to have a committee of believers in the CBE program and learning activities.

The Triangular relationship



There is good coordination between the community based education program of TUCOM and health services in spite of the difference of the organizational pattern, as the latter is controlled by MOH.

This collaboration extends to a degree of collaboration in that the personnel of MOH are involved in training of students including PHCC.

On the other hand reliance on multi professional teamwork at local primary health care in spite of being a vital issue, needs to be ensured during the whole education process.

The local health system which is the product of collaboration of professions, health services provided and the community, constitutes many activities, including health promotion, student (pupil) care and basic health care beside health education and preventive care and the referral to main PHCC and hospitals as secondary level is provided and ensured. Both systems are centralized as regards planning and administration resources, as well as both being fully nationalized.

Still it is evident that success of this cooperation depends more on the personalities of those who are in charge, than the process and structure that regulates this relationship, which represents our last defence mechanism against the objectors and those who oppose.

As the declaration of Alma-Ata outlines the importance of other sectors such as agriculture, animal husbandry, food industry, education, housing, public works and communication for PHC in addition to health sectors, the Non Governmental Organizations (NGOs) are of vital importance toward better collaboration and more successful program achievements. The involvement of different health careers is of importance for better health profession education of undergraduates. The participation of nurses, and teachers of various health professions in these activities, including our example, will positively contribute more to the CBE program and learning activities. Political situation: (It is said that the best way to solve a problem, is to face it.) is a major issue in Iraq, especially for the last few years, mainly due to an unstable socio-political situation, vague vision toward clear policy, hesitation in empowering and enhancing the CBE program, violence and lack of security, restricted movement and transportation, beside the current threats to community unity, which leads to isolation of creative people and reluctance of many sectors for social participation; all this represents a major challenge.

Tradition and cultural aspects play another important role that should be considered, as some of the health events, for example, tuberculosis in women, still represents a social stigma in rural and even urban communities, in addition to (physical) examination of women. This needs to be considered when planning for the CBE program and learning activities. Community involvement is considered essential in community educational program decision-making and its success. The program that steps gradually from bottom to the top will be more acceptable for community participation and involvement. CBE program should consider inter-societal action as a tool for empowerment. The facts are that intra-sectoral coordination is more evident than inter-sectoral coordination. The practice and implementation was obviously deficient and mostly issued for publicity and propaganda rather than scientific reasons, as it was not structured toward specifying educational learning and administration purposes. And the results were disappointing. This involvement should include creative, enthusiastic members composed of teachers and administrators, voluntary organizations like NGOs and graduates, different social class sectors of the community, effective community leaders and industrial and commercial sectors.

The religious organizations could play an important rule also, although our simple experience in Iraq for revealed many negative impacts regarding this part (personal view and experience). TUCOM/CBE program intended to achieve a community involvement that implies the sharing of power relying on regulations and means, or at least community reaction and expressions. But on the ground the type of involvement is more or less nominal and more likely to be passive.

The information flow is more likely to be one way, and even attendance of meetings (at least for the past few years) is more likely a routine process, and is called the 10 dollar meetings (where the attendants are paid this sum of money for their participation irrelevant to the kind of qualification they possess).

Creation is a matter of fiction and those attending are receiving a one-way flow of information. We can classify the degree of community initiatives in the best situation by way of innovations that are initiated by administration rather than community induced. We need community involvement that deals with the educational process from different aspects, related to community diagnosis, setting of objectives, and selection of methods, as well as the planning, organization and evaluation of educational activities. This could be achieved through endorsement from decision policy makers by strengthening and enhancing the concept of decentralization as a prerequisite for effective community involvement. Tikrit University College of Medicine (TUCOM) is among establishments aiming at responding to the Iraqi community through identification and prioritisation of health problems and needs. This could be done by adopting a student centred problem based curriculum, which relies on the CBE program.

In order to identify and prioritize the main health problems and needs of our community according to the college vision, there are several indicators, which we can rely on for prioritizing health problems. These include factors related to the prevalence and rate of the disease i.e. the rate of existing cases among the community and whether it currently represents a burden on peoples' health, the preventability and treatability possibilities and how much burden could be relieved by achieving this and the degree of disability caused by that health problem, and its socio-economic impact on the community besides its medical aspects, as well as the possibility of an emerging outbreak.

The availability of a national program against the disease under study, and in addition to these points, the curriculum considers the prototype value and interdisciplinary input for pedagogical purposes.

As there were many trials to involve the faculty specialist and faculty students through surveys and research, including field work and community projects, still the main dependable records regarding morbidity, mortality and other indicators measures were obtained from MOH and related centers records, so the main strategy the college relied on in regard to prioritizing health problems was based on the existing health data in addition to the new data, whether quantitative or qualitative, for possibility of modification when needed.

Before listing these health priorities, I should stress one important point. According to the current situation in Iraq, and due to the absence of a committee that takes responsibility for updating the health priorities for more than 4 years now, many priority health problems were raised and recognized but were not included among this list. For example, Environmental pollution, violence, increased rate of congenital anomalies and cancer cases, and psychological trauma.

Our educational curriculum is Problem – Based curriculum, where prioritized health problems form the major core. The curriculum is composed of 3 phases: Pre pathogenesis, for the 1st academic year, pathogenesis phase for the 2nd and 3rd academic year and the clinical (clerkship) for the following academic years (4th, 5th and 6th).

By using the 'circus tent' (when a curriculum is based on 3 main pillars, the objectives, priority health problems and discipline content, they all actively share a dynamic inter-relationship) bipolar approach as dependable curriculum design, the health priorities will be studied in all aspects and more than just once as our curriculum is supposed to be of a spiral nature.

At the same time being objective oriented curriculum, this will guarantee that each health problem is distributed in a horizontal manner including the 3 phases of our curriculum and involving all the 6 academic years according to their place in the phase and objectives of each block. In this case these objectives will deliver the pre-set objectives.

These pre-set objectives (through discipline matching and cross matching) will be important in ensuring coverage of the non priority health topics for Academic issues, thus avoiding possibility of creating gaps on one hand and overlapping on the other hand and will help convert individual planning to more central planning.

This kind of curriculum relies on the bi polar theory which tries to accomplish both the intended college objectives upon which the program was initiated and the required faculty content which should be filled properly and related to the subject base.

The following diagram illustrates the design supposed to be followed. In reality and regarding TUCOM priority health problem issue, there is one major defect which is related mainly to absence of a committee that takes responsibility for revising and updating the PHP (priority health problems) which is supposed to be done each year and at least every 3 years. This in fact has not been done for many years (more than 4 years) which is affecting the prioritization process, leading to lack of ability to modify the PHP list and is really representing a big burden on Iraqi community health, leaving these topics to be studied as pre-set objectives as before.

The reason behind this major defect relates mainly to changing of some qualified staff, and the dominance of some faculty staff members who are reluctant to any change or real participation. Another problem facing the curriculum as do other similar program designs, is related to imbalance between supply side thinking (crowded lecture theatres and didactic lecture orientation) and the demand side thinking which prioritizes community health needs, public expectations and societal trends and the balance should be on this side (which is not the current case) as illustrated below.

Moving to another aspect which is related to CBE activities, and toward implementing these PHPs, as mentioned previously each topic will be discussed thoroughly from different aspects (anatomy, physiology, medical etc) during the different phases of the academic study (3 phases constituting the program) and each PHP will be handled more than once through the 6 year of academic study. The above discussions are guaranteed being CBE/ problem based learners, using different tools.

The students meet in small groups twice per week and are presented with PHP under study (discussing the causes, mechanisms, developing hypotheses and strategies) and reach conclusions, under the supervision of the tutor (here acting as a facilitator), and involving them in seminars, and skill labs when indicated.

This will be accompanied by field work, spending 2 days/ week in the field, which involves Primary Health Care Centers (PHCC) where most of the national programs are implemented and provide 80% of total services. Students will be in direct contact with national programs implemented in PHC centers like TB programs, ARI, ORT, vaccination program and so on, besides MCH units with all related activities, family planning centers etc. Field work will also involve factories, schools and according to community health priorities.

Another activity will be applying community projects where each group of students take responsibility for visiting the field and undertaking small studies in one of the PHPs.

These activities, as well as related steps, will ensure strengthening the relationship between college students and community health centers, shifting their direction toward community oriented thinking and ensuring well established CBE program activities.

The supply-demand balance in medical education (Neufeld et al.1993)

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Effect of Acetaminophen and N-Acetylcystine on biochemical markers in asthma

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Abstract

Concurrent with the use of acetaminophen, a large increase in asthma, particularly in the pediatric population, has been reported. The impact of therapeutic doses of paracetamol on serum total antioxidant capacity (TAC) and malodialdehyde (MDA) levels were studied in asthmatic patients. A total of 43 asthmatic patients were enrolled in the study; 24 of them were afebrile and not receiving acetaminophen, and 19 were febrile and received acetaminophen 3 gm / day from 0 – 7 days and 3 gm / day on 10th and 14th days. TAC serum mean was significantly lower in asthmatic patients receiving acetaminophen than that in asthmatics not receiving the drug and the control group. In contrast, MDA mean serum level was significantly higher in the asthma group receiving acetaminophen than that in asthmatic patients not receiving the drug and the control group. Acetaminophen usage led to a significant reduction in FEV1 in asthmatic patients more than in the control group and asthmatic patients not receiving acetaminophen. The above antioxidant activity of acetaminophen was corrected following administration of N acetylcystine. In conclusion, acetaminophen usage leads to a reduction in serum TAC and an increase in lipid peroxidation and consequently this oxidative stress contributes to asthma progression and decrease in lung function. N-acetylcystine administration may restore these changes.

Introduction

The prevalence of asthma in the United States has risen by 75% in the last 3 decades, with a particularly marked increase in children < 5 years of age (160%). [1] The reason for the surge in prevalence is unclear. A number of hypotheses have been proposed, including increased environmental exposures to "synthetic" materials and indoor allergens, decreased exposure to bacteria and childhood illnesses (the "hygiene" hypothesis), the increasing prevalence of obesity, changes in diet and antioxidant intake, increased exposure to cockroaches, changing meteorological patterns, and decreased use of aspirin 2-8. In addition, cytokine imbalance or dysregulation occurring as a result of environmental exposures during infancy and early childhood is hypothesized to induce lifelong T-helper type 2 (allergic) dominance over T-helper type 1 (nonallergic) responses. T-helper type 2 dominance increases the risk for atopic diseases, including asthma. While most studies have focused on the effects of these factors after birth, some have suggested sensitization in utero [6,7,9].

A link between acetaminophen and bronchoconstriction was originally suggested in a case report of an aspirin-intolerant patient as early as 1967 by Chafee and Settipane [10]. Recently, with the rise in asthma prevalence, there has been renewed interest in the role of acetaminophen [11]. Concurrent with the use of acetaminophen, a large increase in asthma, particularly in the pediatric population, has been reported [11].

Various epidemiologic and quasi experimental studies have suggested a link between both therapeutic and overdose ingestion of acetaminophen and bronchoconstriction in certain individuals. Across European countries, asthma rates ecologically associated with acetaminophen use [12], have also been seen at the individual level. In a large population-based, case-control study [13] of young adults, daily and weekly use of acetaminophen was strongly associated with asthma. The relationship was much stronger for severe asthma. Aspirin avoidance did not appear to account for the positive results, as the association was found in those taking only acetaminophen as well as in those taking both analgesics.

A report found that increased frequency of acetaminophen use in 1990 to 1992 was associated with a subsequent risk of physician diagnosis of new-onset asthma diagnosed between 1990 and 1996 14. The risk of wheezing was increased twofold in 30-to 42-month-old children whose mothers frequently used acetaminophen prenatally during weeks 20 to 39 of gestation [15].

N–acetylcystine (NAC), a precursor of reduced glutathione (GSH), has been in clinical use for more than 30 years, primarily as mucolytic. In addition to its mucolytic action, NAC is being studied and utilized in conditions characterized by decreased GSH or oxidative stress [16]. Because of its hepato-protective activity, intravenous and oral administration of NAC have been used extensively in the management of acetaminophen poisoning [17].

NAC exhibits direct and indirect antioxidant properties. Its free thiol group is capable of interacting with the electrophilic groups of ROS [18].

NAC reduced H2O2-induced damage to epithelial cells in vitro [271] and NF-kB activation in some cells [19]. In addition to its effects on PMNs, NAC also influences the morphology and markers of oxidative stress in red blood cells (RBCs) [20]. Treatment with NAC may alter lung oxidant/antioxidant imbalance and reduced $O2^{\cdot-}$ production by alveolar macrophages and decreased BALF PMN chemiluminescence in vitro [21]. Treatment with NAC resulted in a considerable reduction in elastase activity, in both the bronchoalveolar cavity and plasma, related to its property of scavenging HOCl [18].

Bleas et al [22] reported that Oral NAC exerts an antioxidant

protective effect and attenuates pulmonary inflammation induced by antigen exposure in experimental asthma. In addition, oxidative stress stimulates mucin synthesis in airways, a process that is inhibited by NAC [23]. It has been reported that oral NAC reduces BHR to 5- hydroxytriptamine and the augmented eosinophil numbers elicited by allergen exposure in actively sensitized rats [22].

Enhancement of antioxidant defense mechanisms, therefore, seems a rational therapeutic option. Antioxidant therapy, including NAC, has been reported to be useful in the treatment of acute lung injury [24]. Understanding of the key elements of the redox control mechanism of IL-1B induced eotaxin and MCP-1 expression and production by HASMC, may indicate a new strategy in controlling airway inflammation [20,25]. Bleas et al [22] study provides some in vitro evidence that NAC, an antioxidant agent that has been used for many years as mucolytic drug, could also be useful in the treatment of more chronic inflammatory diseases such as asthma. It is not known, at the present time, whether NAC is capable of producing a beneficial effect in controlling the airways inflammation in-vivo. However, if NAC, a relatively harmless molecule, is able to exert an anti-inflammatory effect, this can be used in combination with existing, potent, but potentially more harmful , drugs. This hypothesis, however, needs further investigation [26]. Oxidative stress may increase the risk of asthma, contribute to asthma progression and decrease lung function. Previous research suggests that use of acetaminophen, which hypothesized to reduce antioxidant capacity in the lung, is associated with an increased risk of asthma. The above research outcome measures were epidemiological and clinical parameters. The purpose of this study was to evaluate the effect of acetaminophen on serum total antioxidant capacity and lipid peroxidation and the protective effect of N -acetylcystine in asthma. The study was approved by the ethics committee of our college, and written consent was obtained from all participating subjects.

Materials and Methods

Study Population:

The impact of therapeutic doses of paracetamol (BP 500 mg tablet, SDI, Samara) on serum total antioxidant capacity and malodialdehyde levels, were studied in asthmatic patients. A total of 43 asthmatic patients were enrolled in the study; 24 of them were afebrile and not receiving acetaminophen, and 19 were febrile and received acetaminophen 3 gm/ day from 0 - 7 days and 3 gm / day on 10th and 14th days. Venous blood samples collected from all patients in the two groups on day 15th of their enrollment in the study. Serum TAC and MDA were determined and compared between the two groups and to healthy control findings. N acetylcystine (BP 600 mg tablet Azupharma, GmbH, Germany), a drug with antioxidant properties, was investigated for its beneficial therapeutic effects in preventing oxidative stress induced by acetaminophen in asthma. Thus the drug was given in a dose of 600 mg twice daily for 4 weeks to the above two groups and at the end of treatment course serum collected for determination of TAC and MDA.

The subjects included in the study were outpatients from the Asthma and Allergy Centre or Samara General Hospital outpatients Clinic. The diagnosis of asthma was performed by specialist physician and was established according to the National Heart Blood and Lung Institute / World Health Organization (NHLBI/WHO) workshop on the Global Strategy for Asthma [27]. Patients were excluded if they were smokers, if they had respiratory infection within the month preceding the study, a rheumatological illness, malignancy, diabetic, heart failure, history of venous embolisms, coronary heart disease and liver or kidney disease.

At enrollment, they all underwent full clinical examination, pulmonary function test, and blood sampling. Normal volunteers were also enrolled in the study as a healthy control. None of them had any previous history of lung or allergic disease and were not using any medication. They had a normal lung function test (FEV1 > 80%) and negative skin allergy test. General stool examination was performed for all patients and control to exclude parasitic infections. The sampling was performed during the period from May 2004 to December 2005. All samples were collected at morning following overnight fasting. The study was approved by the ethics committee of our college and written consent was obtained from all participating subjects.

Determination of Total Antioxidant Capacity (TAC):

The method for serum TAC determination was as previously described by Kampa M et al [28]. In brief, in each tube 400 µl of crocin and 200 µl of serum sample were pipetted. The reaction was initiated with the addition of 400 µl of prewarmed (370C) ABAP (5 mg/ml), and crocin bleaching was made by incubating the plate in an oven for 60 – 75 minutes. Blanks consist of crocin, serum samples and phosphate buffer (400, 200, 400 µl respectively) were run in parallel. The absorbance was measured at 450 nm. A standard curve of the water soluble synthetic antioxidant Trolox, prepared prior to use, ranging from 0 – 10 µg/ml was equally assayed under the same conditions.

Determination of Malodialdehyde:

As the index of lipid peroxidation, serum MDA concentration was determined by measuring the thiobarbituric acid reactive substances (TBARS) according to the spectrophotometric method of Janero [29]. The TBARS was determined using OXITEK TBARS Assay kit from Zeptometrix Company.

A 100 ul of sodium doedecyl sulfate was added to the tubes that contain either serum sample or standard and mixed thoroughly. Then 2.5 ml of thiobarbituric acid/ buffer reagent was added down the side of each tube. The tube was covered and incubated at 95 o C for 60 minutes. The tube was then removed and cooled to room temperature in an ice bath for 10 minutes. After cooling the samples centrifuged at 3000 rpm for 15 minutes. The supernatant was removed from samples for analysis. The absorbance of supernatant was measured at 532 nm. Determination of MDA equivalent in µmol/ l in samples was by interpretation from standard curve.

Lung Function Test:

Computerised spirometer (Autosphiror, Discom-14, Chest Corporation, Japan) was used for measurement of FEV1 of the patients at their enrollment in the study and when indicated according to study design.

Statistical Analysis:

The values are reported as mean +/- SD and 95% confidence interval. For statistical analysis between groups paired t test was used. Pearson test was used for correlation analysis. The levels of each marker were compared between the study groups and control group, using SPSS computer package. P values of < 0.05 were considered significant.

Results

TAC serum mean was significantly lower in asthmatic patients receiving acetaminophen (623 ± 216 µmol/l) than that in asthmatics not receiving the drug (876 ± 253 µmol/l; P< 0.005) and control group (1074 ± 207 µmol/l; P<0.0001)(Table.1). MDA mean serum level was significantly higher in the asthma group receiving acetaminophen (7.23 ± 2.82 µmol/l) than that in asthmatic patients not receiving the drug (4.39 ±1.84 µmol/l; P<0.005) and control group (2.24 ± 0.26 µmol/l; P<0.0001). Acetaminophen usage led to a significant reduction in FEV1 in asthmatic patients (82 ± 6) more than in control group (101±5; P<0.005) and asthmatic patients not receiving acetaminophen (96 ± 4; P<0.0001). (Table.1)

Thus acetaminophen usage leads to reduction in serum TAC and increase in lipid peroxidation and consequently this oxidative stress contributes to asthma progression and decrease in lung function. The oxidation index was 11.61 in asthmatic patients receiving acetaminophen and this was double that in asthmatic patients not receiving the drug and about 6 times that of control group.

The chronic ingestion of therapeutic doses of acetaminophen depletes serum antioxidant capacity in asthmatic patients as this study indicated. NAC has antioxidant properties and was used effectively for treatment of acetaminophen poisoning. Thus in this study we investigated a possible beneficial effect of NAC when combined with acetaminophen in asthmatic patients. The drug was given in a dose of 600 mg twice daily for the previous two asthmatic groups for 4 weeks and after that TAC and MDA were measured (Table.2). The results indicated that NAC led to a significant increase in TAC (P<0.05) following the treatment course in asthmatic patients not receiving acetaminophen (986 ±118 µmol/l). However, the increase in TAC serum levels was with higher significance (P<0.025) in asthmatic patients group receiving combined acetaminophen and NAC (804 ± 294 µmol/l).

MDA serum levels decreased significantly (P<0.0005) in asthmatic groups receiving acetaminophen and NAC (4.62 ± 1.14 µmol/l). However the use of NAC by asthmatic patients not receiving acetaminophen led to decrease of serum MDA, but with lower significance (P<0.05). Another interesting finding in this study was that NAC led to significant increase in FEV1 (P<0.0001) in asthmatic patients receiving acetaminophen combined

with NAC. Oxidative index reduced to half (5.75) following treatment with NAC in the acetaminophen receiving group. However, NAC improved significantly FEV1 (P<0.001) in asthmatic patients not receiving acetaminophen. Thus NAC administration to asthmatic patients effectively restores serum TAC and MDA to nearly normal levels. Therefore we suggest the use of combined therapy of acetaminophen and NAC to reduce the impact of acetaminophen on antioxidant defense in asthmatic patients.

Discussion

Asthma prevalence has increased dramatically since the 1970s and currently affects 5-8% 0f the population [1]. Concurrent increases in asthma related to hospitalization and mortality suggest that the change in asthma prevalence did not result from greater diagnosis and detection alone [27], although, asthma related hospitalization and mortality appear to have declined since 1995 with the more widespread use of inhaled corticosteroids [30].

Various hypotheses have been proposed to explain the rise in asthma prevalence, including those relating to changes in early life antigen exposure [31] and to the obesity epidemic [32,33]. The rise in the prevalence and severity of asthma, however, also coincided with a large increase in the use of acetaminophen in the 1970s and 1980s [9].

This substitution of acetaminophen for aspirin was not evaluated inrandomized trials [14]. By contrast, ibuprofen was recently compared with acetaminophen for pediatric febrile illness in a large randomized, double blind clinical trial [34]. Among the subgroup of 1879 children with asthma, asthma related outpatient visits were significantly lower in the ibuprofen arm, and asthma hospitalization was non significantly reduced compared with the acetaminophen [34]. The trial did not include a placebo control, therefore it is uncertain whether ibuprofen decreased or acetaminophen increased asthma morbidity. Alternatively, the finding may have been due to chance [35].

An increase in asthma risk related to acetaminophen use, was suggested by a population based case control study [13]. The study was limited, however, by the case control design in which the diagnosis of asthma preceded ascertainment of acetaminophen use [35]. Recently, analysis of data from prospective study, examined if acetaminophen use was associated with a new physician diagnosis of asthma among participants not previously diagnosed with asthma [35]. They reported that their findings confirm and extend the findings of prior cross sectional studies of asthma and acetaminophen use . In a cross countries trial in Europe,consumption of acetaminophen was ecologically associated with the prevalence of wheeze, diagnosed asthma and BHR [12]. In addition, to the ecological findings, a population based, case controlled study from UK showed a dose dependent relationship between acetaminophen use and asthma [13]. The association was much stronger for severe asthma. Aspirin use was equally common among cases and control subjects. Although, aspirin avoidance was slightly more common among cases than the control subjects, the magnitude of the difference in that study was not large enough to explain the association of acetaminophen and asthma. Acetaminophen use in late pregnancy was associated with an increased risk of wheeze among offspring [13,35].

A recently reported study [15] is another development in the story of how acetaminophen consumption may be a potential risk factor for developing asthma and atopy. The authors demonstrated a positive association between acetaminophen use in late pregnancy and subsequent asthma, wheezing and elevated serum IgE antibodies in 6 year old children. The data are consistent and build upon earlier observation of the same cohort demonstrating that frequent use of acetaminophen in late pregnancy is associated with increased risk of wheeze in the offspring aged 3 years old [13].

Sheehan et al [15] adds to the existing literature on acetaminophen and asthma that has developed since the report of the same research group in 2000 13. Another study reported from the USA, which indicated that taking acetaminophen for more than 14 days per month, had a 60% greater risk of incident asthma than those who never used acetaminophen [35]. Recently, data from New Zealand again demonstrated that current use of acetaminophen was associated with two fold increase in the prevalence of wheeze in children aged 6-7 years, with a smaller increase in wheeze in children who received acetaminophen in the first year of their life [36].

Association between acetaminophen consumption and asthma in adults may result from aspirin avoidance, or from the use of acetaminophen for asthma symptoms or for symptoms arising from the use of asthma medications [36]. The advantages of Sheehan studies in which the association is between maternal consumption and infant or child symptoms is that these alternative explanations are likely to operate [36]. Maternal asthma or allergy may still confound the association, as it may be associated with both asthma in the child and preferential acetaminophen use [36]. However, in the most recent study, the relationship persists after adjustment for maternal asthma [15].

All the above mentioned studies that suggest a link between acetaminophen use and development of asthma are epidemiologic studies. To our knowledge, only one study reported [37] that determines the effect of regular intake of acetaminophen on serum antioxidant capacity in healthy volunteers. It reports that chronic ingestion of maximum therapeutic doses of acetaminophen depletes serum TAC in healthy volunteers in as few as 14 days. It shows a trend toward reduced TAC over time. Another study investigated the effect of acetaminophen use on glutathione and antioxidant status in febrile children receiving repeated supra therapeutic doses [38]. TAC of serum and erythrocyte glutathione concentration were reduced in the group receiving supra therapeutic acetaminophen doses.

In the present study the association between acetaminophen use in asthmatic patients and changes in their serum TAC and MDA as parameters of oxidative stress was evaluated. Serum TAC significantly lowers in asthmatic patients receiving acetaminophen than in asthmatics not receiving the drug and control subjects. In addition, MDA serum levels were significantly higher in the asthma group receiving the acetaminophen than in asthmatics not receiving the drug and the control group. FEV1 of asthmatic patients reduced significantly after treatment with acetaminophen and it was significantly lower than that for asthmatic patients group not receiving the drug and that of the control group.

The acetaminophen use in asthmatics as this study indicated, leads to a reduction in serum TAC and increase in lipid peroxidation and consequently these oxidative stresses contribute to asthma progression and decrease in lung function. The oxidation index was two fold higher in the asthmatic group receiving the drug than in the asthmatic not receiving acetaminophen and about six times than that of the control group. Acetaminophen related brochospasm has been reported for at least 39 years in a subset of patients with asthma [10]. Acetaminophen provokes bronchospasm in up to 35% of patients with stable, aspirin sensitive asthma [11,39,40]. Reactions generally are milder than seen after aspirin challenge and occur with a high, but clinically relevant, dose of acetaminophen. Acetaminophen related bronchospasm also has been demonstrated in some patients of no history of aspirin sensitive asthma. The mechanism for this phenomenon is unclear, but may involve glutathione [11]. Acetaminophen decreases the level of glutathione in the liver, kidneys and lungs [41,42]. These decreases are dose dependent. Overdose levels of acetaminophen are cytotoxic to pneumocyte and cause acute lung injury, whereas nontoxic, therapeutic doses produce smaller, but significant, reductions in glutathione levels in type II pneumocytes and alveolar macrophages [43].

Oxidative stress in asthma occurs from the production of ROS in the lung by inflammatory cells. ROS causes contraction of airway smooth muscle and release of leukotrines and other secondary inflammatory mediators, leading to BHR and bronchoconstriction [44]. The importance of glutathione pathway in asthma is reinforced by the finding that polymorphisms in glutathione – s- transferase are associated with increased susceptibility to pediatric asthma and with slowed lung function growth in childhood [45].

If the association between acetaminophen consumption and asthma is causal, then as well as identifying a new risk factor for asthma, the proposed mechanism of this biological effect provides further support for the hypothesis that an imbalance of oxidant / antioxidant equilibrium influences susceptibility to developing asthma, with glutathione metabolism [46] in particular appearing to have a pivotal role. It is hypothesized that the mechanism by which acetaminophen would increase the risk of asthma is through depletion of reduced glutathione leading to a decrease in pulmonary antioxidant defenses [14,15].

Evidence that administration of therapeutic doses of acetaminophen can influence oxidative status is available with the finding of this study and the recent reports of a decrease in TAC [37], and if this effect is replicated in the lungs then it is likely that they would be more susceptible to oxidative insults [47]. As the purpose of the lungs is to permit transfer of gases including oxygen, they are exposed to higher concentrations of oxygen than other tissues, and hence are more at risk of oxidant induced injury and thus require antioxidant defenses to prevent permanent tissue damage [47]. The data from the present study and Shaheen et al [15] contribute to the hypothesis that oxidant / antioxidant equilibrium is important with regard to asthma, a concept that has developed over the past 20 years. The extent to which a high oxidant load is causally associated with asthma rather than being a secondary consequence of the inflammatory processes that accompany asthma remain unclear [47]. However, the data from the aforementioned perspective studies that exposure to a drug with pro – oxidant qualities such as acetaminophen increases the risk of subsequent asthma, are supportive of the more general hypothesis that a greater oxidative burden has a causal role in the pathogenesis of asthma [47].

Host antioxidant defenses may also be modified by the environment and are also considered potentially important with regards to asthma [48]. Those with lower endogenous antioxidant capacity as assessed by dietary intake [49], or serum markers of dietary antioxidants [2] are more likely to have incident or prevalent asthma, although studies have been inconsistent. The more

pertinent measurement of lung antioxidant status has proven to be difficult to measure, but the non invasive measurement such as the use of exhaled markers of pulmonary disease [50] have also demonstrated increased oxidative activity in those with asthma compared with those without.. More invasive techniques such as BAL have demonstrated reduced levels of antioxidants such as vitamin C, vitamin E and urate, with higher concentrations of glutathione in those with asthma compared with those without the disease [51,52]. One interpretation of these observations is that the increased oxidative burden associated with asthma results in a reactive increase in the lung antioxidant capacity in the form of increased pulmonary glutathione [50], while subsequently depleting systemic antioxidant reserves as reflected in lower levels in the blood.

In vitro studies demonstrating that oxidative stress results in increased expression of the pro inflammatory transcription factors, nuclear factor KB and activator protein-1, provide one possible mechanism of how oxidative stress may promote an inflammatory condition such as asthma at cellular level [47].

As the concept that oxidant / antioxidant balance may influence the development of asthma becomes more established, the potential for prevention and therapeutic intervention needs to be established. These would aim to reduce the risk of developing asthma or modify the severity of the disease. As reported there was a link between frequent use of acetaminophen and asthma incidence and severity [15]. In addition, administration of the drug to normal individuals, led to reduction in TAC [37]. In febrile non-asthmatic children acetaminophen administration reduced TAC, GSH, SOD and increased aspartate aminotransferase activity significantly [38]. Although, the chronic ingestion of therapeutic dose of acetaminophen in asthmatic patients depletes serum TAC, as this study indicated.

N acetylcystine is an antioxidant drug commonly used in clinical practice [53], especially for the treatment of acetaminophen poisoning. On the basis of the above mentioned facts the time has come to evaluate the use of combination of NAC with acetaminophen in asthmatic patients. Thus their combination leads to a significant increased in serum TAC, accompanied with significant reduction in MDA serum levels. Also, the combination of both drugs cause significant improvement of FEV1 and reduction of oxidation index. Two possible antioxidant mechanisms have been proposed for this thiol containing antioxidant 53. Firstly, NAC may have direct free radical scavenging properties. ROS may react with NAC resulting in the formation of NAC disulphide 18,40. Secondly, and of more importance, NAC may also exert its antioxidant effects indirectly by facilitating GSH biosynthesis [21]. A reduction in the levels of various markers of inflammatory activity, such as ECP, lactoferrin and antitrypsin was found after administration of NAC [54]. Treatment with NAC resulted in a considerable reduction in elastase activity, in both the BAL fluid and plasma, related to its property of scavenging HOCl [18].

Oral administration of NAC before antigen exposure of a sensitized rat, a widely used experimental model for asthma, resulted in attenuation of antigen induced augmented lipid peroxidation and altered glutathione status, suppression of the nuclear factor Alfa levels and enhanced inducible nitric oxide synthase, intracellular adhesion molecule – 1, and mucin MUC5AC expression that follows allergen exposure and a marked decrease in airway hyperresponsiveness, bronchoalveolar lavage fluid eosinophil number and exudation after antigen challenge [22]. Other animal studies [55,56] reported that NAC administration reduces serum and plasma MDA levels, plasma NO and increases plasma SOD, CAT, GSH and GPX. In addition, NAC administration was with modulatory effect on genes [19,57].

Reactive oxygen species are involved in the activation of several mitogen activated protein kinases (MAPK), key players in the production of several cytokines 54. NAC decreased the expression of eotoxin and monocyte chemotactic protein -1 in human airway smooth muscle cells. Also NAC decreased the IL-1B induced production of ROS, as suggested by a reduction in the 8- isoprostan production [54]. The potential therapeutic value of antioxidants including NAC awaits support from controlled clinical trials that evaluate oral versus inhaler route of administration.

N acetycystine is a thiol compound with antioxidant properties [89] that reduces the lung damage produced by oxidant stress in different experimental models and exerts beneficial effects in pulmonary diseases in which oxidant stress appears pathogeneticaly relevant [26]. In experimental models of allergic asthma, antioxidant, and anti inflammatory and anti hyperresponsiveness effect of oral NAC was observed [22,58]. Allergen challenge of the peripheral airways in atopic asthmatics has been demonstrated to produce immediately, significant amounts of ROS released locally from eosinophils and other inflammatory cells [59]. Blesa et al [22] reported that antigen challenge causes increase in lipid peroxidation levels and decreased GSH/GSSH ratio, confirming the existence of oxidative stress. An increase in GSSH and decrease in GSH level in epithelial lining fluid early after antigen challenge has been reported recently in asthmatics [60]. Oral treatment with NAC is efficient at attenuating the augmented lipid peroxidation and GSSH levels, and reversing the decreased GSH/GSSH ratio, confirming its antioxidant properties in this animal model [22].

Since the presence of oxidative stress was demonstrated for rat models of allergic asthma, activation of a number of inflammatory elements reported to be oxidant sensitive, including transcription factors like NF-kB and cytokines such as TNF Alfa; and expression of gene like iNOS, intracellular adhesion molecule -1 (ICAM-1) and MUC5AC were sought [17,19,22,25,57,61]. Furthermore, treatment with an antioxidant should attenuate these activated factors as well as prove beneficial against the typical features of experimental asthma such as airway hyper-responsiveness, eoisinophilia and exudation.

NF- kB is considered as a pivotal transcription factor in chronic inflammatory diseases and very sensitive to oxidants as well as other stimuli [19]. Augmented activation of NF-kB has been demonstrated in the airways and inflammatory cells of asthmatic patients as well as in experimental asthma [19]. The antioxidant properties of NAC may contribute directly to its inhibitory effects on NF-kB activation [22]. Alternatively, NF-kB activation may result from the release of TNF Alfa, which induces generation of ROS [50].

TNF Alfa is a proinflammatory cytokines that has been implicated in the pathogenesis of asthma and considered a potential target for therapeutic intervention. This increased TNF

Alfa level was attenuated in NAC treated animals, a finding consistent with the suggestion that GSH status regulates TNF Alfa production in vivo and with the inhibition by NAC of the increase in TNF Alfa observed in various studies [17,19].

The ICAM-1 gene contains NF-kB binding sites and its expression is oxidant sensitive [57]. The expression or airway and endothelial ICAM-1 are enhanced by TNF Alfa and other inflammatory cytokines [57]. Therefore, various elements may contribute to the enhanced expression reported by Blesa et al [22] and the inhibition found for NAC would be consistent with other reports [62,63].

Mucus overproduction is often observed in airway inflammation and contributes to airway obstruction in asthma. Recent work indicates that oxidative stress stimulates mucin synthesis in airways particularly synthesis of MUC5AC 23. Treatment with NAC blocked this early expression of MUC5AC. These results confirm that oxidative stress appears important in the excessive production of mucin airways, and antioxidants are effective at suppressing the enhanced expression of mucin genes in experimental asthma [58].

Consequential to these inhibitory effects of antioxidant treatment on treanscription factors, inflammatory cytokines and genes, there should be experimental evidence of beneficial effects of NAC on characteristic features of allergic asthma. NAC was effective at reducing both BHR and the elevated BALF eosinophil numbers [22]. Several lines of evidence suggest that the production of oxygen radicals is implicated in the airway response to allergen [46]. Thus the antigen induced hyper-responsiveness was found to correlate significantly with the increases in oxygen radicals release from BALF cells in sensitized animals [48].

The oxidant transcription factor NF-kB appears relevant to eosinophilia in allergic asthma [19]. Also, cell trafficking into inflammatory sites depends on the sequential expression of cell adhesion molecules, which are modulated by oxidant species; in particular, ICAM-1 is important for induction of BHR in vivo as well as eosinophil migration into inflamed lung [57]. Therefore, the reduced BHR and eosinophilia produced by NAC may also be related to its antioxidant properties.

In conclusion, oral administration of NAC attenuates the oxidative stress induced by acetaminophen in asthmatic patients. In keeping with these results the reported findings from several studies in animal models indicated that NAC 1) attenuate antigen induced lipid peroxidatin and altered glutathione status, 2) suppression of NF-kB activation, mucin MUC5AC expressions, ICAM-1,elevated tumor necrosis factor Alfa levels, 3) a marked decrease in BHR and BALF eosinophil number and exudation after allergen challenge. These results confirm that oxidative stress may contribute to the pathogenesis of asthma. The potential therapeutic value of antioxidant including NAC awaits support from controlled clinical trials.

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Table 1. Effect of acetaminophen on serum total antioxidant capacity and malondialdehyde in asthmatic patients.

Variable	Asthma - No acetaminophen 24 Patients	Asthma - Acetaminophen 19 Patients	Control - 50 Subjects
TAC µmol/l Mean SD 95% CI	 876 253 769-984	 623 216 519-726	 1074 207 1015-1133
MDA µmol/l Mean SD 95% CI	 4.39 1.84 3.62-5.16	 7.23 2.82 5.88-8.58	 2.24 0.26 2.16-2.30
FEV1 Mean SD 95% CI	 96 4 94-98	 82 6 79-85	 101 5 99-103
Oxidation index	5	11.61	2.08

P value < TAC MDA FEV1
No acetaminophen Vs Acetaminophen 0.005 0.005 0.0001
No acetaminophen Vs Control 0.02 0.01 0.0001
Acetaminophen Vs Control 0.0001 0.0001 0.005

Table 2. Therapeutic effect of N- acetylcystine on serum TAC and MDA induced by acetaminophen.

Variable	Asthmatic afebrile - No acetaminophen - 24 Patients Pretreatment Post-treatment P	Asthma febrile - Acetaminophen - 19 Patients Pretreatment Post-treatment P
TAC µmol/l Mean SD 95% CI	 876 986 0.05 253 118 769-984 936-1035	 623 804 0.025 216 294 519-726 663-945
MDA µmol/l Mean SD 95% CI	 4.39 3.63 0.05 1.84 0.74 3.62-5.16 3.32-3.94	 7.23 4.62 0.0005 2.82 1.14 5.88-8.58 4.07-5.17
FEV1 Mean SD 95% CI	 96 103 0.001 4 7 94-98 100-106	 82 98 0.0001 6 8 79-85 94-102
Oxidation index	5 3.68	11.61 5.75

The pattern of accidental drug poisoning in children

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Key words: Accidental drug poisoning, children, risk factor

Abstract

Objectives: To review the pattern of drug poisoning in children in regard to age, sex and type of drug ingested, and the circumstances that lead to poisoning which, hopefully lead to fruitful conclusions.

Methods: This is a retrospective study that involved all children who were admitted to pediatric ward or the intensive care unit at Princess Haya military hospital as cases of drug non-deliberate poisoning. The studied group involved children aged below 14 years, during the period from 2004 to 2006. All cases were reviewed and studied referring to their medical records.

Results: The data showed that, the majority of cases occurred in children between the age group 1-6 years; males recorded a higher rate than females. Acetaminophen was the most frequently ingested drug. No fatality as well, was recorded. The only case which was registered to be deliberate selfharm was excluded from the study.

Conclusion: Drug poisoning is a major health problem; prevention should involve a multidisciplinary approach including family education, particularly the seriousness of drug poisoning and the preventive measures that should be taken. A national poison center is crucial, that could conduct further valuable studies in collaboration with other medical authorities.

Introduction

With the explicit stretching of health services in Jordan provided by different health provisions, one expects an escalated risk of drug poisoning due to increased availability [1], A rich medical literature surrounding this issue is found.

Poisoning per se is considered to be a common medical emergency in childhood particularly in the preschool age group worldwide [2]; the severity and frequency of poisoning is reduced by different preventive measures, however, we still need more effective and safer means of prevention as well as treatment [3].

Methods

Given the lack of poisoning incidents registry in this hospital, the author retrospectively collected and reviewed all medical records of children who were diagnosed and admitted as cases of drug poisoning to princess Haya military hospital in Aqaba - a city south of Jordan, with a population of around 200,000 - during the period from February 2004 to February 2006. All cases were admitted to the pediatric ward or intensive care unit.

Age, sex, type of drug ingested, and history of the circumstances that lead to poisoning were recorded. Toxicological screenings of blood or urine were not executed. The study excluded cases of poisoning caused by all other substances. Munchausen's by proxy syndrome and subjects above 14 years of age were also excluded (hospital policy regards pediatric age group as up to 14 year of age).

Results

The sample involved a total of 56 children (n=56). Thirty-two (57%) of them were males and twenty four (43%) were females. Male: female ratio was 1.3:1 .The youngest child in the studied sample was aged 10 months, while the eldest aged 13 years. However the proportion of age groups within the sample varied, most of the cases occurred in younger age group, the commonest age group was that aged less than six years n= 44 (78.5%), while the older age group from eleven to fourteen years constituted the least n= 3 (5%), Table 1.

It was also found that Acetaminophen was the most frequent drug involved accounting for (12.5%) of cases ,which is comparable to the findings in studies done worldwide [2,4,5], to be followed by different antibiotics (10.7%) and antihistamine preparations (7.1%). Aminophlline recorded the least in the list, Table 2.

The average hospital stay was one to three days. Only two cases were rushed to the intensive care unit due to their critical condition. No deaths were recorded.

Table 1. Non-deliberate drug poisoning according to age groups.

Age (years)	Male n	Female n	Total n	Total %
<1	3	2	5	(8.9%)
1-3	11	7	18	(32%)
4-6	12	9	21	(37.5%)
7-10	5	4	9	(16%)
11-14	1	2	3	(5.3%)

Table 2. Drugs involved in nondeliberate poisoning:

Drug	n	%
Acetaminophen	7	12.5
Antibiotic	6	10.7
Antihistamine	5	8.9
Vitamin preparation	5	8.9
Anticonvulsant	4	7.1
Ibuprofen	4	7.1
Cough preparation	4	7.1
Oral hypoglycemic agent	3	5.3
Antidepressant	3	5.3
Antihypertensive	3	5.3
Iron	3	5.3
Benzodiazepine	2	3.5
Cardiac drugs	2	3.5
Topical agent	2	3.5
Salbutamol	2	3.5
Aminophylline	1	1.7

Discussion

The proportion of such medical emergencies in the pediatric hospital admissions in our retrospective study reached 3.7%, despite the fact that this study dealt with poisoning due to drugs only while most literature focused on poisoning due to medicinal and non-medicinal agents. However, such conditions seem to be major health issues as the incidence sequalae, are considered to be quite high [6]. The highest risk age group in our sample was found to be those aged less than six years, which is globally agreed upon in regard to poisoning by different agents. [2,4,7]. Most researchers thought that such findings could be attributed to the exploratory nature of the developmental stage in this age group [1, 8]. One point of interest is the temptation of the flavoring additives, the coloring, and the attractive smell that some children may think drugs are candies.[9] Some parents prompt resentful children to take medications, telling them that it is a delicious candy [8]. Most medications are unfortunately dispensed in non child-proof containers, a fact that should be considered with care in future.

The author believes such explanations are applicable in this study sample. Other factors are also important, such as the easy reach children have to medications, leaving children unattended for a relatively long period of time, availability of medications, the improvement of medical services and coverage of larger groups of populations that made drugs more available. Some researchers found the family size to be a determinant factor in increased risk of incidence [8], a similar finding applied to this study. This study found that 57.1% of children came from large sized families (five or above). The author couldn't find any particular data in regard to the family circumstances passed through (pregnant mother, death of a family member, divorce, new comer, illness of a sibling, change of residence etc, that may increase the incidence of accidental poisoning, while some researchers did find so [10, 11]. The educational level of the caregivers [8] and the presence of an adult with chronic medical illness within the family [7] that may be considered as risk factors were not studied by the author which was a limitation of this study.

As formerly mentioned, analgesic, antipyretic and antibiotic preparations were incriminated to be the commonest causative drugs; they seem to be the most dispensed medications to children given the fact that infectious conditions are common and unfortunately, as the author believes, some physicians tend to over prescribe antibiotics.

The relative ease in reaching emergency services enabled such condition to be handled early, Most cases reached casual\ty within less than two to three hours after the ingestion of the drug and only two cases warranted ICU admissions. Despite the fact that the study wasn't primarily interested in methods of parent's discovery of poisoning, most cases were discovered accidentally i.e. lips or clothing soiled with treatments, empty or reduced amount in medication containers, presence of child witness,etc. Less commonly children were discovered after developing significant features of poisoning.

Conclusion

Accidental drug poisoning in children is conspicuously a crucial health concern to all health workers and pediatricians in particular, pharmacy industry and lay community. There has been a generous medical literature concerning preventive and safety measures surrounding this issue. The author believes that adoption of such measures should be continuously refined see Box 1. Further in-depth studies will add more to our knowledge and alertness. The author is aware that the national poison control center has been recently established in Jordan, affiliated to Jordan University Hospital, however, this centre needs to be more advocated to refer to expert advice and collaboration.

Box 1. Safety measures:

- Keep all medications in a secure cabinet out of reach of children and use Child-resistant proof containers.
- Keep medications in the original containers and discard all residual or expired drugs.
- Never interchange dosages among different drugs.
- Avoid calling drugs candies.
- Education of parents and lay community, pediatricians, family doctors, and GP's awareness.
- Don't take your medications in front of children.

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The etiological agents of mastitis in lactating women in Iran

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Abstract

Mastitis is an inflammatory condition of the breast; and is usually associated with lactation, and therefore called lactational mastitis. The two principle causes of mastitis are milk stasis and infection. The aim of this study was to evaluate the etiological agents of mastitis in lactating women in Tehran, Iran and to determine the bacterial pattern of resistance.

A total of 203 milk samples were taken from puerperal women hospitalized in Tehran, and suffering from mastitis during the years 2003-04. These samples were examined by bacteriological methods. After identification of the bacteria by biochemical tests, their antibiotic sensitivity was assessed by disk diffusion method.

From 203 samples, 26 samples (12.8%) were culture positive, 21 (80.8%) were Coagulase negative *Staphylococcus* and 5 (19.2%) samples were *Staphylococcus aureus*. All strains of *S.aureus* and *Coagulase Negative Staphylococcus* were sensitive to Cloxacillin, Fluxacillin and Dicloxacillin.

Our findings showed that *Staphylococcus aureus* and *Coagulase negative Staphylococcus* were the major etiological agents of mastitis in Iranian women.

Introduction

Mastitis is an inflammatory condition of the breast. It is usually associated with lactation, therefore it is also called lactational mastitis.[1] Mastitis usually occurs during the second or thirds weeks opost partum [2]. In the majority of reports 74 to 95% of mastitis occurs in the first 12 weeks post partum[3] and it is seldom observed after 12th week post partum.[2] Mastitis is relatively common and the reported incidence varies from a few to 33% of lactating women [4, 5, 6]

The two principle causes of mastitis are milk stasis and infection. Milk stasis is usually the primary cause, which may or may not be accompanied by or progress to infection. Milk stasis occurs when milk is not excreted completely. Improper attachment of the neonate to the breast, inability of the neonate to suck enough milk, limitation of duration, frequency of lactation and obstruction of lactational canals, can cause milk stasis [1]. Proper conditions for bacterial growth following milk accumulation may be accrued.

The most common isolated organisms in mastitis are *Staphylococcus aureus* and Coagulase negative *Staphylococcus*. Different types of *streptococcus*, Gram negative bacilli like *E.coli* sometimes are found [2,7] Salmonella, Mycobacterium, Candida and Cryptococcus species are seldom isolated [4].

Several routes have for the entry bacteria to the breast have been suggested, through the lactiferous ducts into a lobe; by haematogenous spread; and through a nipple fissure and abrasions of the nipple into the periductal lymphatic system. Nipple fissure has been reported with increased frequency in the presence of mastitis [7, 8].

Diagnosis of mastitis is usually based on the clinical manifestations. Usually one breast becomes hard, reddened, painful, inflamed, and a reduction in milk secretion is observed [4]. General signs such as fever $\geq 38.5°c$, chill and malaise may be observed, but it is not possible to distinguish infective mastitis from non-infective mastitis by clinical manifestation, therefore culturing of a milk sample is recommended to diagnose infective organisms [2].

Milk samples with more than 10^6 leukocytes and more than 10^3 bacteria $/_{ml}$ is indicative of infective mastitis, [1] The diagnosis of mastitis is important due to two reasons. Firstly, it is the cause for reduction of milk production and almost 25% of mothers avoid breast feeding [4, 5] with subsequent influence on infants' health [9]. Secondly, mastitis increases the possibility of infection transmission from mothers to their infants. In Rotaviruses the risk of transmission increases by two to four fold [10] and suggests that mastitis may increase the risk of transmission of HIV through breastfeeding [11] Due to the importance and significant role of mastitis in infant's heath, it seems necessary to diagnose women with the signs of mastitis and treat them urgently.

The aim of this study was to determine the etiologic agent of mastitis in lactating women and their antibiotic resistance pattern.

Materials and methods

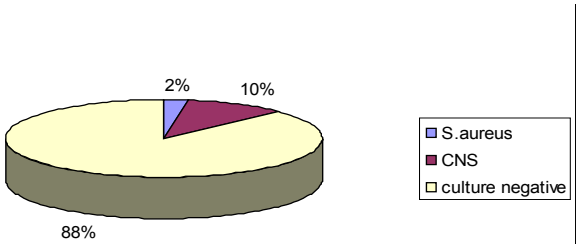
This study was carried out on 203 milk samples of puerperal lactating women hospitalized in Mirza kochakkhan hospital in Tehran during the years 2003-04. Clinical findings of mastitis were confirmed by the physician, in all women. Before sampling, all women washed their breasts with warm water, and their hands with soap and water. The first few drops of their milk was thrown away and 5ml of milk was collected in sterile tubes afterwards. The samples were immediately transported to the laboratory for culturing and

microscopic examination. The samples were inoculated in different bacterial culture media and were incubated at 37°c for 24h. The determination of isolated bacteria was done by suitable biochemical tests and direct smear [12]. Drug sensitivity tests were performed by disk diffusion method using a Muller Hinton agar.

Results

From 203 samples, 26 samples (12.8%) and 177 samples (87.2%) were positive culture and negative culture respectively. From 26 samples with positive culture, 21 samples (80.8%) were Coagulase Negative Staphylococcus (CNS) and 5 samples were Staphylococcus aureus. (Figure 1)

Figure 1: Distribution of Bacteria in Mastitis in Iranian Women



Sensitivity and resistance of isolated staphylococci to different antibiotics were shown in Table 1. All strains of S.aureus and *Coagulase Negative Staphylococcus* (CNS) were sensitive to Cloxacillin, Fluxacillin and Dicloxacillin.

Table 1: Drug Resistance among Staphylococcus aureus and Coagulase Negative Staphylococci (CNS) isolated from mastitis in Lactating Women in Iran

Sample	S.aureus Resistance		*CNS Resistance	
	Number	Percent (%)	Number	Percent (%)
Amoxicillin	3	60	6	6/28
Tetracycline	2	40	5	8/23
Erythromycin	2	40	4	19
Azithromycin	2	40	4	19
Fluxacillin	0	0	0	0
Dicloxacillin	0	0	0	0
Cloxacillin	0	0	0	0
Cephalothin	3	60	3	3/14
Co- trimoxazole	4	80	8	1/38

*Coagulase Negative Staphylococcus

Discussion

In this study 203 milk samples were taken from puerperal lactating women with mastitis. 26 samples were positive culture. From 5 samples *Staphylococcus aureus* was isolated. In numerous reports, Coagulase Negative *Staphylococcus* aureus and *Staphylococcus aureus* were considered as the most common factors of mastitis [2,7] similar to our study. In investigations of Aabo et al [13] and Matheson et al [14], the prevalence of isolated *Staphylococcus aureus* in milk samples of puerperal women with mastitis was higher than in healthy women. Bacteria are often found in milk from asymptomatic breasts. The spectrum of bacteria is often very similar to that found on skin. Bacteriological studies are therefore complicated by the difficulty of avoiding contamination from skin bacteria [15]. Thus the presence of bacteria in the milk does not necessarily indicate infection, even if they are not contaminants from the skin. Fresh human milk is not normally a good medium for bacterial growth. Cell counts and bacterial colony counts are useful to distinguish between infectious and non-infectious mastitis. In this study we tried to provide proper conditions of sampling, we asked mothers to wash their breasts with warm water and wash their hands with water and soap and let run the first few drops of milk, the subsequent drops were collected in sterile tubes.

According to W.H.O.'s reports, a sample of $>10^6$ leukocytes and $> 10^3$ bacteria $/_{ml}$ is an indication of infective mastitis [1] therefore the colony count of bacteria in this study was considered and the samples with more than 10^3 bacteria were assessed, but in 30 other samples the number of colonies was less than 10^3 /ml. This observation can be attributed to contamination of samples with skin organisms.

Mastitis, if untreated, can lead to lactation failure, recurrent mastitis, or breast abscess. The early diagnosis and treatment of mastitis may help prevent more serious suppurative infection, recurrent mastitis, and other complications. In a study recurrent mastitis developed in 13 patients (10.2%) within a median of 24 weeks of follow-up. [16]

In our study all isolated *Staphylococcus* were sensitive to Fluxacillin, Dicloxacillin, and Cloxacillin. This means these antibiotics can be used for treatment of mastitis but Erythromycin, Fluxacillin, Dicloxacillin, Amoxicillin and Cephalothin were recommended for the treatment of infective mastitis by WHO[1]. Our finding shows that most strains of isolated bacteria were sensitive to Erythromycin and Azithromycin, followed by Erythromycin and Tetracycline and these antibiotics must be considered as first stage in treatment of mastitis.

As mentioned, mastitis is common in various populations and affects neonate's nutrition and neonatal health, so prophylaxis of mastitis is an important matter to be looked at in neonatal health. Proper methods of lactation such as, close relation of mother and neonate, suitable attachment of neonate to the breast, and the frequency and duration of lactation are among the best ways to prevent milk stasis and infection. If the infection occurs it should be diagnosed and treated by suitable antibiotics such as Erythromycin, Cephalothin and if necessary, by Cloxacillin or their related antibiotics. Antibiotic therapy must be used with suitable methods of lactation to stimulate the milk evacuation.

The results of this survey indicated the role of *Staphylococcus aureus* and *Coagulase Negative Staphylococcus* in causing infective mastitis.

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The pre-participation evaluation of athletes

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Abstract:

The pre-participation evaluation of the athlete deals with the epidemiological group with which most physicians do not have the opportunity to deal, that is the "healthy" and physically active population between age 10 and 30. Even though the likelihood of significant medical conditions being found in this group is relatively uncommon, it is not rare. Specifically speaking the concern is exercise-related sudden death and significant musculo-skeletal disability, but also issues of increased likelihood of injuries, alcohol and drug abuse, suicide, mood disorders, pregnancy, and sexually transmitted diseases are also key to the appropriate evaluation and counseling of this group (1-4).

The intent of this article to present a synthesized pre-participation evaluation that identifies medical conditions that may limit participation, predispose to injury or illness, evaluate risky behaviors, counsel on health-related issues, and ideally evaluate fitness level and performance. This will include a focused history, physical examination, and the appropriate indications for laboratory testing. We will also discuss those medical conditions that might disqualify an athlete from specific athletic participation.

Screening History

The first question is an attempt to deal with current infections, illnesses, and medical conditions that require active medical management. Examples of these include diabetes and asthma. The next few questions deal with those conditions that may play a factor in the future health of the athlete or may require further evaluation. Particular attention is paid to musculo-skeletal conditions that may not have completely resolved or are recurrent. Musculo-skeletal conditions are the most common disqualifiers for athletic participation [5]. Examples of this include recurrent patellar subluxation or incompletely treated shoulder dislocation. Family history is an opportunity to screen for premature death, disabling cardiovascular disease, or genetic abnormalities like Marfan syndrome or hypertrophic cardiomyopathy. Medications and substance abuse provides clues on ongoing medical conditions, their management, the patient's compliance, their understanding of drugs and their effect on sport, and the opportunity to discuss nutritional supplements. Nutrition and fitness evaluation is an excellent chance to educate and provide preventative health information. Immunization records' importance is obvious. And finally, the review of systems includes screening questions for cardiac, respiratory, neurological, muscular, gynecological, and dermatological problems.

A special note is made at this juncture regarding problems more prevalent with female athletes. Screening questions are included to uncover the female athletic triad of amenorrhoea, eating disorders, and osteoporosis. Female athletes are considerably more prone to stress fractures [6] . Also, patello-femoral syndrome, anterior cruciate ligament injuries, foot disorders, and mitral valve prolapse is more common in female athletes[7].

Pre-Participation Physical Examination

Important issues will be highlighted only. Blood pressure should be evaluated in relation to the patient's age, height and weight please refer to appropriate norms . Visual acuity and field testing is important. Cardiovascular examination should focus on conduction abnormalities, valvular abnormalities, and signs of hypertrophic cardiomyopathy. This may signal further laboratory evaluation see below . Respiratory evaluation should note signs of asthma, but remember exercise-induced asthma will not be evident at rest. Abdominal evaluation should look for organomegaly. There should be a check for hernias even though they are not disqualifiers. The musculoskeletal evaluation should focus on those areas of previous injury and rehabilitation. This is the most critical section and may prompt further evaluation since it is the most frequent disqualifier. Finally, a skin check should look for those conditions that are infectious and can temporarily prevent participation in sports with direct skin-to-skin contact like wrestling. Examples of skin conditions include herpes, impetigo, and tinea corporis [1-5].

Laboratory Evaluations

Krowchuk reviewed the use of pre-participation laboratory tests in 1997 and recommended that urinalysis, complete blood counts, and serum ferritin levels have poor yields in asymptomatic and healthy patients and that these tests do not affect participation significantly to warrant their expense [8]. Routine screening electocardiograms EKG is not recommended by the American Heart Association[9], however in selective individuals it can be quite useful [1-5]. Those individuals with "red-flagged" family and personal history or physical signs would be served well to have an EKG. Those individuals that have signs and symptoms associated with Marfan syndrome or congenital or acquired heart disease may be better served with an echocardiography study and/or exercise stress testing [10] . Common sense will determine further evaluation of incompletely rehabilitated musculo-skeletal conditions.

Specific Medical Conditions and Sports

EYE CONDITIONS

The main issue here is those athletes that have only one functioning eye with better than 20/40 corrected vision, should be evaluated by an ophthalmologist. As well, it would be pertinent to have protective eyewear in those sports that allow, them such as basketball, and contraindicate involvement in sports with projectiles and collision, like shooting or boxing [15].

CARDIOVACULAR CONDITIONS

Hypertrophic cardiomyopathy contraindicates sports participation, especially highly resistive activities like weight lifting. A complete evaluation by a cardiologist or a sports medicine specialist is required. The presenting symptomatology includes exertional dyspnoea, angina, palpitations, and syncope. Signs include hypertension, and mid-systolic ejection murmur. An abnormal EKG shows left ventricular hypertrophy, and Q waves in the inferior and anterior leads. Critical factors include severe hypertension, ventricular tachyarrhythmias, and suspected coronary artery disease [1-5, 11].

Mitral valve prolapse (MVP) is not absolutely contraindicated, but does require further evaluation by a cardiologist or sports medicine specialist. It is the most common cause of mitral regurgitation in young adults. It can also coexist with tricuspid valve prolapse in about one third of individuals. Common presenting symptoms include cardiac palpitations and chest pain. On examination, there is often an individual with low blood pressure, low body weight, pectus excavatum, joint laxity, and a mid-systolic click that may be followed by a late systolic murmur. The EKG can be normal or may show inverted T waves in the inferior leads. Critical factors include symptomatic dysrrhythmias and mitral regurgitation [1-5, 12].

Congenital aortic valvular stenosis is not absolutely contraindicated, but does require evaluation by a cardiologist or sports medicine specialist. The valve is usually bicuspid. Males predominate and typically present with exertional syncope. The precordial exam shows a harsh systolic murmur with radiation to the carotid arteries. A click and thrill are often found. Critical factors include dysrrhythmias and pre syncopal episodes [1-5].

Congenital long QT syndrome is a hereditary ventricular repolarization abnormality. The most common presentations include cardiac arrest, seizures, and syncope related to high exertional circumstances like marathons. An EKG with a corrected QT for heart rate greater than 0.50 seconds and perhaps a double humped T wave or negative U waves help make the diagnosis. Women have the greatest incidence of cardiac events with this abnormality especially at heart rates greater than 100bpm [1-5, 13].

Marfan syndrome is an autosomal dominant condition with an equal male to female ratio. There are, classically, blue sclera, arachnodactyly, arm span greater than height, and aortic root dilatation leading to aortic insufficiency. Auscultation reveals a diastolic blowing murmur, and water hammer pulse rapidly disappearing. The EKG reflects left ventricular enlargement. Critical factors include aortic aneurismal dissection and rupture [1-5,14].

MUSCULOSKELETAL CONDITIONS

As we have mentioned earlier, this is the most common category that leads to restriction from sport [5]. The most common joints include the knee and the ankle [16]. The athlete must be able to use the joint in all aspects of the sport with which he is intending involvement. As well, there should be no effusion, full range of motion and at least 80 percent of normal strength in the effected joint [1-5].

CONVULSIVE DISORDERS

There are no contraindications to involvement in sport even contact sports with well-controlled convulsive disorders. However, if the sport involves high risk like climbing or scuba diving, a consultation with a neurologist or sports medicine specialist should be considered. Athletes with poorly controlled seizures, frequent occurrences, bizarre forms of psychomotor epilepsy, or unusual post convulsive states, should be withheld from collision, contact or projectile sports like weight-lifting [17].

HEAD AND NECK

Concussions have been the topic of controversy for many years [18]. Recently, the Canadian Academy of Sports Medicine is working on a census statement on return to play after concussion. As best as my present awareness allows they have suggested that the symptoms of concussion, that is headache, dizziness, amnesia, decreased alertness, nausea, mental difficulty, sensory changes, and visual disturbances, should be resolved for at least a week and not evident during activity for full clearance.

The persistence of some of these symptoms is denoted as "post-concussion syndrome" and this is a contraindication to return to play. The reasoning behind this is the propensity to have a fatal second impact while recovering from the first concussion, leading to significant brain damage [19]. Subsequent concussions require neurologic or sports medicine specialist consultation.

"Burners" or "Stingers" are related to brachial plexus pulling or cervical nerve root impingement. To return to sport after these injuries requires full range of motion of the neck and freedom from radicular pain [20].

SPECIAL CIRCUMSTANCES

Exercise-induced asthma requires pre-participation beta agonist prophylaxis and does not disqualify the athlete from any sport [1-5]. Heat-related illness requires appropriate counseling and the avoidance of extreme temperatures and adequate hydration 1-5. Sickle cell trait has no contraindications to any sport, but does require counseling regarding adequate hydration and acclimatization to various altitudes [17]. Sickle cell disease is contraindicated from collision and contact sports [17]. Acute infection is generally contraindicated from all sports [1-5].

Conclusion

We have discussed those medical conditions that might disqualify an athlete from specific athletic participation. We have also included a focused history and physical examination through a well-developed screening form. With this knowledge, it will be easier to identify those medical conditions that may limit participation, predispose to injury or illness, evaluate risky behaviors, and counsel on health-related issues.

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Renal scarring and vesico-ureteric reflux in childhood urinary tract infection

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Key words: Reflux nephropathy, renal scarring, vesico-ureteric reflux (VUR), urinary tact infection (UTI).

Abstract

Background: Renal scarring is a serious but preventable complication of urinary tact infection (UTI) in children. The damage is usually irreversible. However, not all children with UTI and vesico-ureteric (VUR) will develop scarring but the majority of children with renal scars have a history of UTI.

Objective: This study was done to show the incidence of renal scarring in children with UTI with or without VUR.

Methods and results: 69 children, aged 1 year & 8 months to 8 years & 5 months, with UTI were included in the study. Urinary tract ultrasonography, voiding cysto-urothrography and dimercapto-succinic acid scan were done for all children to detect urinary tract abnormalities, vesico-ureteric reflux and renal scarring. Renal scars were found in 15 children (21.7%) and VUR in 23 out of 53 (43.4%). All children were normotensive and had normal renal function.

Conclusion: Renal scarring should be looked for in all children with UTI with or without VUR.

Introduction

Urinary tract infection (UTI) is a frequent problem in infants and children. In Jahra area, the overall incidence of UTI is 5.5% [1]. Vesico-ureteral reflux (VUR) has been reported in 35-40% of children with UTI; and renal scarring may be seen in 9.5-38% of those with reflux [2]. In children with a history of recurrent UTI, renal scarring is even more common; it may reach up to 25% [3, 4].

Renal reflux can result in renal scarring, renal insufficiency, rennin-mediated hypertension and end-stage renal disease [5]. There is abundant clinical and experimental evidence that UTI and VUR is important in the pathogenesis of renal scarring [6, 7] Bacteria can reach the kidney from the bladder by the reflux, especially when bladder wall inflammation is co-existing, leading to formation of cortical micro abscesses and development of renal scars. However, it has been shown that antibacterial treatment can arrest or prevent the development of scarring [8].

As reflux nephropathy is irreversible, the objective of this study was to determine the frequency of renal scars and evaluate reflux in children with established UTI attending Pediatric Outpatient Department in Al-Jahra Hospital, Kuwait.

Patients and Methods

Sixty-nine children with proved UTI were included in this study. Sixty-seven were females and two were males. Their ages ranged from 1 year and 8 months to 8 years and 5 months. Details of presentation, treatment and patient's and family history were obtained. Further information was obtained from parent's interview when necessary. All underwent renal ultrasonography and micturation cystourethrography (MCUG) as a part of initial evaluation. Dimercapto Succinic Acid (DMSA) scans were obtained initially and 4-6 months after the last episode of pyelonephritis. Grading of VUR was based on the International Reflux Committee classification [9]. Renal Scars grading was based on Goldarich and co-workers grading system [10].

All patients were treated with appropriate antibiotic therapy and remained on prophylaxis as indicated. They were followed up and urine routine, urine culture & sensitivity, renal function tests, blood pressure measurements and growth parameters were checked regularly.

Results

Of the 69 patients who did DMSA scan (Table 2), 12 had scars on initial diagnosis and 3 developed them 4-6 months later (21.7%). Their ages ranged from one year and eight months to eight years and five months. One was male and 14 were females. The male patient was circumcised. Forty-five patients (65%) had history of recurrent UTI (Table 1). E.coli was the cause of infection in all patients, except one who had Klebsella. The scars were more common in the left kidney (60%). In 11 patients the scars were in the upper lobe of the kidney (73.3%) and 4 in the lower lobe (26.7%). Clinically they were normotensive and had normal growth and development.

Varying grades of vesico-ureteral reflux (VUR) was detected in 23 patients out of 53 (Table 3), who did MCUG (43.4%); 14 with grade I, 4 with grade II, 3 with grade III and 2 with grade IV reflux. Fourteen patients had bilateral reflux and 9 had unilateral reflux. Reflux grade 1, and scars stage I & III were the most prevalent sequelae following UTI. Of the fifteen children with renal scars 9 had VUR; 7 with grade I reflux and 2 with grade II. Ultra-sound of abdomen showed congenital anomalies in 3 (33.3%), one with congenital polycystic kidney,

one with congenital multicystic kidney and the third with congenital left hydronephrosis (Table 3).

Discussion

Reflux nephropathy is known to be a major cause of renal failure in children. Renal scintigraphy with dimercaptosuccinic acid (DMSA) is a valid diagnostic tool for confirming the presence of acute pyelonephritis as well as for documenting the presence of renal scarring. Its sensitivity and specifity are more than intravenous pyelography; IVP [11&12]. Only 40% of our patients with proved renal scarring showed changes on IVP. However, the routine use of DMSA scan during the acute illness is not considered necessary [13]. In our study, 15 out of 69 studied children with UTI had renal scarring (21.7%). Other authors showed different results. Szlyk et al [14] found that 38% of their patients had renal scars, while Polito et al [15] reported 37%. The low incidence of renal scarring in our cases may be due to early treatment of our patients as there is evidence that delay in diagnosis and treatment of UTI can contribute to the development of renal scarring [16 & 17].

Risks of hypertension and chronic renal failure are higher with diffuse scarring [18]. Hadi et al [2] showed that hypertension occurred in 7.1% of their patients over a 6-year period. In our study, none of our patients suffered from hypertension. However, a long period of follow-up is necessary to verify the occurrence of this complication. Vesico-ureteral reflux (VUR), has been identified as a risk factor for the development of UTI and renal scarring. Dick et al [2] showed that 62.5% of their patients with VUR had renal scarring. Lana et al [20] reported that 60% of girls and 44% of boys in the first year of life with VUR and UTI had renal scarring. Others showed similar results [21]. In our study, only 9 patients out of 15 with renal scarring (60%) had VUR (Fig. 1). This proves that; although VUR is a risk factor for development of renal scarring, the lesion can still develop without VUR. This may be due to intra-renal reflux facilitated by the flat papillae in the kidney. Bacteria can also reach the kidney through transient reflux occurring with severe UTI and bladder wall inflammation, or by binding to epithelial cell surface in some children with specific blood groups.

Radiologists often report various degrees of dilatation of the collecting system of the kidney in patients with UTI on renal ultrasonography [22]. However, in our study the ultrasound findings were not predictive of VUR and VCUG was necessary to rule out VUR, regardless of renal ultrasound findings. A similar conclusion was noted by S Mahant et al [22]. Davey and colleagues [23], as well, found that the frequency of VUR in children with mild renal pelvic distension did not differ significantly from that in children without distension on renal ultrasound.

Conclusion

Our study suggests that incidence of renal scarring is high (21.7%) in children with UTI and that absence of VUR is not protective, as renal scarring can occur without VUR. We recommend early diagnosis and aggressive treatment of children with UTI. We also recommend performing DMSA scan for all children with UTI, especially in younger ages and in those with high grade VUR.

Table 1. children with recurrent UTI

	Once	2-3 times	> 3 times	Total
Male	1			1
Female	24	8	12	44
Total	25	8	12	45

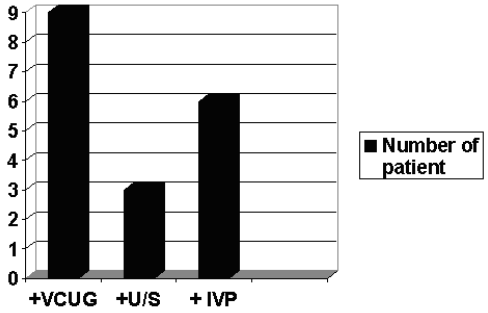
Table 2. Findings of DEMSA scan in 69 patients with UTI

Score	< 2 yr	> 2 yr	Total	%
Stage I	2	6	8	11.6
Stage II	2		2	2.9
Stage III	3	2	5	7.2
Total	7	8	15	21.7

Table 3. Findings of MCUG study in 53 patients with UTI

Grade	< 2 yr	> 2 yr	Total	%
Grade I	2	12	14	26.3
Grade II	3	1	4	7.6
Grade III	1	2	3	5.7
Grade IV	2	0	2	3.8
Total	8	15	23	43.4

Figure 1. Results & other imaging studies in 15 patients with proved Renal Scars.



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Do other classroom activities change primary care physicians' health care practice?

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Key words: CME, CPD, Physicians practice, Tomorrow's doctors, Recertification

Abstract

The objective of this review is to highlight the importance of continuous, flexible and practical forms of medical education. It is very clear that basic and medical sciences are expanding exponentially, thus it is impossible for any medical doctor to be aware of all the new technology and knowledge in this field. The physicians themselves cannot appreciate their needs sufficiently to maintain a base of current medical knowledge. Therefore, all physicians should be encouraged to improve their medical knowledge and skill by means of continuous medical education (CME), but the question is how? The studies demonstrated that there is very weak effect of formal CME activities on physician's performance depending upon the methods of those activities .It is also stated that didactic CME modality has little or no role to play, however informal types of CME activities have their own impact. Thus, it is suggested that learning should not be confined with boundaries and it should be continuous, flexible and practical (Continuous Professional Development-CPD), allowing physicians to choose from a menu of learning formats after having identified which style best suits them.

The history of the medical profession itself has documented high levels of error, far higher than other industries tolerate. All payers, either governmental or private have focused on unnecessary care and unmanageable costs. Novel techniques and practices to address these problems need to be developed. Indeed, it is developed but not in full and it has not able to produce any change so far[1]. Continuing study was suggested as far back as 1786 as one of the solutions of problem as to how to handle the exponential growth of medicine. The Dean of Harvard Medical School explained the need for CPD in 1947 by saying: "The rate and magnitude of publication. Indeed, probably half of what you know is no longer true, but what troubles me more is that I don't know which half it is."[2]

What is CME?

Continuing medical education (CME) is but one component of Continuous Professional Development and is traditionally viewed in terms of knowledge update - extremely important for doctors working in specialties where the knowledge base is expanding rapidly. However, there is a range of other academic, vocational, and professional activities that are essential for effective practice. There is no sharp division between continuing medical education and continuing professional development, as during the past decade continuing medical education has come to include managerial, social, and personal skills, topics beyond the traditional clinical medical subjects. [3, 4]

How we assess what we need to know?

Learning needs assessment is a crucial stage in the educational process that leads to changes in practice, and has become part of policy for continuing professional development. Learning needs assessment can be undertaken for many reasons, so its purpose should be defined and should determine the method used and the use made of findings. Exclusive reliance on formal needs assessment could render education an instrumental and narrow process rather than a creative, professional one, whereas didactic lectures, which are a familiar part of undergraduate medical education, are not effective in changing doctors' behavior. New techniques have therefore been developed to facilitate learning. Although many physicians participate in these activities, it is not clear how effective they are for individual physicians. [5, 6]

How we approach learning at work places?

Approaches to learning and complex interaction of the environment, personal factors, and opportunities are known to affect undergraduate learning. The work place is promoted as a deep approach to learning. The achieving approach to learning (competitive and focusing on achieving high grades) found in university students was not evident in the workplace and surface approach to learning (rote memorization, lack of understanding) divided into surface rational (feeling overwhelmed by work) and surface disorganized (preference for order, detail, and routine) approaches. Doctors value educational time away from their clinical practice to reflect and to make social and informal professional contact. An important aspect of CPD is the discussion obtained outside the lecture theatre, known as the ***"corridor effect,"*** or over coffee or a good meal. It is possible that politicians and managers are missing the point. CPD should also provide recharging of the batteries; by allowing doctors time

to discover and fulfill learning needs, increase job satisfaction, improve performance, and increase self-esteem. [7, 8]

Problem or Evidence based learning

Problem based learning is perhaps the most effective but least recognized learning method of CPD. It may comprise problem-solving, feedback through investigation results, specialist opinions, observation, reflection, on difficult cases, discussions of critical incident, and education by patients. New cases should be more than repetitions of previous scenarios and doctor should avoid becoming "comfortable" with their deficiencies in a particular area. Acknowledgement of problem or work-based learning may promote self-awareness of such "blind spots". [9] Evidence-based medicine (EBM) is a style of practice in which doctors manage problems by reference to valid and relevant information. Unfortunately, research consistently has shown that clinical decisions rarely are based on the best available evidence. [10]

Quality assurance (QA) & tomorrow's doctors

QA is another of the acronyms increasingly used in health care however many of the principles of quality assurance are derived from industry and business, which has resulted in an increasing emphasis on measuring performance and outcomes, but not always that which comes from having experience of the "coalface" on the ward or clinic. 11 To use the political jargon, sustainable development should be planned for new future generations of doctors rather than outcome measure oriented physicians.

In its updated publication Tomorrow's Doctors 12 the General Medical Council, U.K, recommends that undergraduate curriculums should "foster the knowledge and understanding, attitudes and skills that will promote effective lifelong learning and support professional development." CPD should be allied to CME to ensure that "high levels of clinical competence and knowledge are maintained." CPD should be initiated at the undergraduate level in the areas of critical appraisal, healthcare ethics and the law, self-directed problem based learning, communication skills, and information technology skills. In addition, skills should be developed in teaching, research, management, interviewing, and committee work, recognizing that future working conditions may be based on changing condition, flexible employment, fixed term contract, a life long learning society.

Inducement or deterrent for physicians

Approaches differ widely around the world, but most rely on professional self-regulation. Increasingly there are common features between specialties and across borders and recognition of such between national and international bodies. Whatever system adopted or legislated, however, every doctor has a personal responsibility to participate in continuing professional development and has a choice of a wide range of accredited educational activities to fulfill that responsibility. [13, 14]

Most of the developed countries are using an hours based credit system to quantify educational activities[15], in which one hour of educational activity equates to one credit. Different countries have either three or five year cycles, and the number of credits required varies from 50 to 100 per year. Other countries are considering introducing an hour's based system, but there is much debate as to whether this system of accumulating hours of educational activity is a valid measure of such activity. Changes in behavior or outcome measures are more valid, but their objective measurement is difficult. Some examples are;

- Financial reward: in Belgium the satisfactory completion of voluntary accreditation results in a 4 % bonus based on salary.
- Penalties: in Norway general practitioners lose 20% of their fees if requirements for professional development are not met
- Mandatory contracts with insurers and hospitals: Italy, Luxembourg, Portugal, Publication of lists of doctors who have fulfilled the requirements of the local continuing professional development program.

Discussion

Designing behavior change programs and evaluating their effects on patient care has been a persistent challenge in research on continuing medical education. The challenge becomes even more complex when we aim to change behaviors that are interactive and highly influenced by the formal and informal institutional context. A legitimate concern is that many physicians will fail to recognize new and necessary changes in practice and patient care will suffer as doctors become outdated and their performance deteriorates over time.

Physicians perceived CME events as beneficial. Confidence levels rose, and the events provided a break from practice that refreshed and relaxed, thus indirectly benefiting patients. As part of a an assessment of the attitudes of general practitioners to continuing education depicted that almost all the respondents (99%) agreed that commitment to CME is lifelong [16]

Nevertheless, other study [17] revealed that few responders identified major changes in their practice as a result of formal CME events, and information was seldom disseminated among practice colleagues. The results of this study challenge educators who claim that CME has its own impact on quality of care! But there is another approach which was evaluated by Daly MB et al [18] that is, Academic detailing in the office of physicians might be fruitful.

A study 19 discovered that more than two-thirds of the studies (70%) displayed a change in physician performance, while almost half (48%) of interventions produced a change in health care outcomes. Community-based strategies such as academic detailing (and to a lesser extent, opinion leaders), practice-based methods such as reminders and patient-mediated strategies, and multiple interventions appeared to be cost effective activities. On the other hand, it is also observed [20, 21] that the Internet-based intervention was associated with a significant increase in the percentage of high-risk patients treated with pharmaco-therapeutics according to guidelines (pre-intervention, 85.3%; post-intervention, 90.3%; P = .04). Mixed results and weaker outcomes were demonstrated by audit and educational materials, while formal CME conferences without enabling or practice-reinforcing strategies, had relatively little impact.

Many CME providers have difficulty defining the nature of the outcomes, much less documenting the outcomes for which they are responsible. The vague nature of the terms "outcome," "impact," or "result" in the complexity of health care and medical education environments is a particular obstacle to

many education providers. To overcome these barriers, there was model created to identifying major domains of possible outcomes for CME interventions; these are the domains of individual participants, employee teams, the larger organization, patients, and the community. These domains are useful in either assessing a single CME activity's outcomes or comprehensively assessing a CME provider's outcomes-assessments strategy. While a few studies[22, 23] showed that there was no relationship between global quality-of-care and quantity of the physicians' formal CME activities. [24]

Differences in the sources of information that physicians utilize in their practice have several implications for the quality of care delivered and the dissemination of medical information. It is also observed that primary care internists have a greater preference for consulting the medical literature, while family physicians more often rely on colleagues and specialists as sources of information. [25, 26]

These differences suggest that the focus of information dissemination through journals or textbooks may be more effective for internists, while colleagues or "educationally influential" physicians in the community may be more effective vehicles for information dissemination to family physicians. Thus general practitioners are generally satisfied with the different CME courses; however, they would have preferred a greater emphasis on informal tutorials rather than formal lectures, and practical procedures rather than recent advances in physiology and neonatology. [27]

Since primary care is the essential foundation in effective health care systems, it follows that providing evidence-based primary care would reflect positively on the community's health[28] Text showed that respondents of many studies mainly welcomed EBM and agreed that its practice improved patient care. But they had a low level of awareness of extracting journals, reviewing publications and databases, and even if aware, many did not use them. Only 16% had access to bibliographic databases and 10% to the worldwide web. The respondents showed a partial understanding of the technical terms used in EBM. The major perceived barriers to practicing EBM were patient overload and lack of personal time. Respondents thought that the most appropriate way to move towards EBM was by learning skills of EBM (43%), followed by using evidence-based guidelines developed by colleagues (37%). Hence these results emphasized that teaching all the primary health care physicians (PHCPs) literature searching and critical appraisal skills[29] by feasible and friendly methods should be considered. But there are few areas where physicians still are feeling lack of skill and even lack of information and communication.[30] The literature emphasizes unstructured time should be included in formal CME which is perceived as crucial in aiding the process of applying knowledge to practice.

Thus learning should be continuous, flexible and practical (Continuous Professional Development) and allow recognition and application of new evidence and ideas and enable the development of new skills. It should be supple and allow doctors to choose from a menu of learning formats after having identified which style best suits them. Ultimately, in an evidence-based culture the ideas put forward need to be evaluated to ascertain the clinical effectiveness of Continuous Professional Development.

Conclusion

Clearly, too, a single training model could not be designed to fulfil all needs of such a diverse group of specialties and staff, and it will need to be able to take on a "select and blend" approach to their professional development, depending on their particular needs. The opportunities provided by formal events for informal learning and exchange of ideas, with peers in general practice are highly valued. The relevance of the subject to practice, and the suitability of the educational format, was considered paramount importance. In addition, resources and people are required to drive the process; otherwise Continuous Professional Development may become a "great aspiration" of politicians and managers rather than a reality.

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Effect of mental health training program on primary-care physicians' skills, eastern province, S.A

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Key words: Mental illness, training course, File audit, evaluation, PHC physicians, Saudi Arabia

Abstract

Objective: To measure the effect of mental health training program on the ability of PHC physicians to detect and manage mental illnesses.

Method: It is an intervention study carried out in Dammam Sector, Saudi Arabia. The course was implemented in June 1999, and ran over 4 days. A random sample of 31 PHC physicians was selected. The area of study was divided into five clusters, from which ten physicians were selected randomly to evaluate their skills in diagnosis and pattern of managementsof mental disorders in PHC settings. File audit was used through the period of six months prior, and six months after the course, in order to evaluate the training effect on the physicians' performance. Every physician acted as his/her own control.

Results: The total number of psychiatric cases detected by the ten physicians during the first 6-month period was 20 cases out of about 60,000 PHC patients. Following the course, during the last six-month period, 21 psychiatric cases were detected (3.5 cases in every 10,000 patients). According to the results, the trained physicians were able to diagnose more generalized anxiety disorder, social phobia, and sexual disorder, at the expense of non-specified mental disorders. The majority of cases were referred to psychiatric clinics.

Conclusion: A shorter-term mental health-training program didn't enable PHC physicians to detect the minor mental health problems. There is a need for an advanced and long-term mental health-training course, focusing on the practical application of identifying mental illness among PHC patients.

Introduction

Mental illness is frequent in the primary health care (PHC) setting; about 20-40% of PHC patients suffer from diagnosable mental disorders[1,2]. A similar percentage was found among Saudi PHC patients[3]. Most of these are cases of depression, anxiety, or somatoform disorder[4,5]. They mostly present with more physical than with psychological complaints[6,7], and are usually associated with a significant degree of disability[8].

There is evidence suggesting that, despite the high prevalence of these mental illness, they frequently pass unrecognized by the PHC physicians[2,4,9]. Higgins (1994) conducted a meta-analysis of extensive literature over 25 years performed in PHC settings to find that 33-79% of mentally ill patients had not been recognized by their physicians10. A study conducted in Al-Khobar showed that 21.7% of adult male PHC patients suffered from some mental illness, of which 80% were undetected[5]. Another in Riyadh also showed low identification index of the PHC physicians (33%)

Experience shows that brief training programs can substantially upgrade the PHC physicians' knowledge and attitudes towards these disorders[12,13]. Most studies consider programs of two weeks or more are cost effective and appropriate[14,15]. Recognition of such patients is vitally important in order to reduce the suffering of individuals and the futile consumption of public resources [16].

The aim of the present study was to measure the change in PHC physicians' skills resulting from a short mental training course for the detection and management of common mental disorders in PHC settings.

Method

This is an intervention study carried out in Dammam Sector, Eastern Province, Saudi Arabia. The course was implemented in June 1999, and ran over four days. A random sample of 31 PHC physicians out of 191 physicians working in 111 PHC settings was selected. All the recruits had no previous exposure to post-graduate training in psychiatry and never worked as a physician in any psychiatric facility.

To evaluate the PHC physician's skills, the area of study was divided into four clusters. Dammam and Khobar each represented a cluster, Qatif and Safoa, as a cluster. Rastanoora, Jubail and Bqaq represented the fourth cluster. Thirty-three percent from each cluster was randomly selected as the representative sample of 10 physicians.

The course was structured accordant with the national program to improve the PHC physicians' skills in the field of mental health care. It contained assessment and management of the common mental health problems in the community e.g. depression, anxiety, somatization, as well as mental problems in children and young people, the basic psychiatric medication, and the referral system. A variety of teaching methods were employed, including brief lectures/demonstrations, videotapes, small group workshops, discussions and role-play. The workshops were facilitated by experienced psychiatrists and were conducted in small groups.

All files of presumably mentally ill patients were evaluated, of whom each 10 physicians had seen during the six months prior to the course and six months after the course and register in the registration books. File audit was used to estimate the detection rate and patterns of management before and after the training intervention. Every candidate acted as his/her own control. The difference between the quantity and quality of management achieved by each candidate in the Post-intervention from those obtained in the Pre- intervention periods would be the outcome product of the training course on that particular subject. At the end of the intervention course, a self-administered questionnaire was distributed to the trainees, consisting of seven questions. For each question, the responses were made on a five-point scale ranging from completely unfavorable (scoring one) to completely favorable (scoring five).

Results

The study sample was composed of 31 PHC physicians. Of these 16 (51.6%) were men and 15 (48.4) were women. Twenty (64.5%) were Saudi, 6 (19.4%) from other Arab countries, and 5 (16.1%) were non-Arabs. Their ages ranged from 26 to 49 years with a mean + SD of 34.24+ 7.47. Their professional service in PHC settings ranged from 1 to 20 years (mean 4.81+ 5.19). Six of the trainees (19%) were not exposed to undergraduate psychiatric training. Twenty percent had been exposed to 4 weeks or less, and 71% of them exposed to more than 4 weeks. Ten PHC physicians (30%) of the trainees were selected to evaluate their practical performance; 4 were men physicians (40%) and 6 women (60%).

Each PHC physician saw an average 40 patients per working day. Roughly he/she was seeing 12,000 cases per year. The total number of psychiatric cases detected by all the ten physicians during the 6-month period proceding the course was just 20 cases out of about 60,000 PHC patients (3.3 cases out of 10,000 patents). This detection rate has not been affected by the training course, for the total number of detected cases during 6-month period following the courses was almost the same (21 cases).

Table 1 shows the recorded different psychiatric diagnosis before and after the intervention. The trained PHC physicians were able to diagnose more of generalized anxiety disorder, social phobia and sexual disorder, at the expense of less of non-specified mental disorders. They diagnosed 17 cases out of the all-detectable cases (85%) before the intervention and diagnosed 20 cases (95%) after the intervention.

Most of the diagnosed patients were referred to psychiatric clinics. A small proportion of the patients were referred to non-psychiatric clinics e.g. medical or pediatric clinics. The management forms were reassurance and non-psychiatric medication. These were given to 20% of the mentally ill patients in the pre-program period and 24% in the post-program. Psychiatrists prescribed all anti-depressive drugs previously. In the pre-course period no patient had a follow-up appointment at PHC settings, but after the post course two patients had follow-up with their PHC physician.

All physicians who took part in the sample felt that it was necessary to have a mental training program. Thirty-two percent of them felt that they were average in psychiatric knowledge before the intervention. After the intervention only 3.2% of the trainees had the same feeling, while the rest had the feeling that their level had improved (see Table 2).

Discussion

Despite the high prevalence of mental illnesses in PHC settings, physicians were not able to detect most of these cases. Each physician discovered on average only two cases annually. Moreover, there are a number of physicians who had never diagnosed any case, neither before nor after the training. This means that most mentally ill patients do not get real benefit from their visits to PHC settings. This is deplorable in view of the fact that, most of these minor psychiatric morbidity cases if detected and identified early could be appropriately managed by PHC physicians, if only they are given a little instruction in this field.

None of these physicians had adequate undergraduate or postgraduate encounters with psychiatric patients. Many of them may be wary of becoming involved in mentally ill patients' care, preferring to adopt a minimalist role and deal only with physical complaints. As most patients usually present with physical symptoms, somatically oriented physicians are more likely to miss the concomitant psychological features. Besides the stigma of mental illness, which is still so strong in this culture might influence the physicians' readiness to label their patients as such. Whereas the PHC physicians have in their pharmacies a wide a range of drugs for treating somatic symptoms, they are offered no psychotropic drugs whatsoever. Presumably, their reluctance to document psychiatric diagnosis in their registration books is partly due to the strength of habit, or the presence of co-morbidity with a more chronic medical condition to which they are more equipped to offer help.

Although the studied PHC physicians did not diagnose significantly more psychiatric cases after their course, they became more definite about the diagnosis than before . Additionally, some began to give appointments for follow-up. These findings indicated that if theses courses were modified in quality and quantity, they could provide a good out-come. This is supported by Joukamaa et al findings that the ability of PHC physicians' detection for psychiatric cases was significantly associated with postgraduate long-term psychiatric training and qualification as a specialist in general practice (Family Medicine)2. So, short the training period of the course, lack of psychiatric medication, and the absence of continuous medical

education might play a role in the failure of the physicians' improvement.

However, many psychiatric training programs for PHC physicians were able to improve the trainees' ability to diagnose and manage mentally ill patients[18-20]. When we compare our findings with that achievement, there were very important differences in the methodology of the evaluation process; they had used screening tools i.e. General Health Questionnaire (GHQ) before the intervention, not file audit, and asked the PHC physicians to assess in advance the patients' emotional status[17,18]. This design could increase the doctors' awareness of mental illness and make them ask their patients about related symptoms and signs. Also, the distribution of the GHQ to the patients before the interview may alert the patient to psychological complaints which he or she might not have otherwise discussed with the doctors spontaneously. In some studies the participants had already been exposed to mental health training before the intervention, despite that they recommended the requirement to further training in the basic skill set[19].

Conclusion

A shorter-term mental health-training program didn't enable PHC physicians to detect and manage mental health problems. It appears that there is a need for an advanced program, preferably a long-term mental health-training course that focuses on practical application of correctly identifying mental illnesses. Also, we recommend further efforts to lift the physicians' skills such as to establish a referral clinic with specialists who are interested in primary mental health care within PHC settings. Hoping to build good communications between the PHC physicians and the specialists through consultations, may promote primary mental health care.

Table 1. The Mental Illness Diagnosis Before & After The Intervention course, Dammam Sector, Saudi Arabia.

Diagnosis	Pre-intervention	Post-intervention	Total (%)
Depression	4	2	6 (14.6)
Gen. Anxiety	1	6	7 (17.1)
Depression & Anxiety	3	1	4 (9.8)
Social phobia	0	3	3 (7.3)
Enuresis	4	4	8 (19.5)
Sleep disorder	3	1	4 (9.8)
Sexual disorders	1	2	3 (7.3)
Non-specific	4	2	6 (14.6)
Total	20	21	41

Table 2. Trainees' Assessment Of The Short Mental Training Course, Dammam Sector, Saudi Arabia.

	Not favorable--\ /----Favorable					
	1	2	3	4	5	Mean
Achievement of the course objectives	0	1	4	19	7	4.0
Difficulty of contents	0	1	6	14	10	4.1
Learning	0	0	7	12	12	4.2
Application	0	1	8	9	13	4.1
Time spent	3	6	10	7	5	3.2
Organization	0	4	13	13	1	3.4
Enjoyment	0	1	3	11	16	4.4

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Strategies to assist HIV positive women experiencing domestic violence in Nigeria

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Abstract

Background and objective: Partner notification is encouraged for safer sex practices to minimize HIV infection, but PLWHA reports violence after disclosure. Most surveys focusing on violence and HIV/AIDS concentrate on identifying women with violence but do not encourage the participation of such women in planning feasible interventions to reduce violence. Study aimed to use participatory reservation approach (PRA) to assist PLWHA to plan interventions to reduce domestic violence against them.

Methods: PRA was used to enable PLWHA plan intervention to reduce domestic violence. Data was collected through 12 focus group discussions and interview guides with a sample of 96 PLWHA in a network of PLWHA. Data was analyzed quantitatively and qualitatively using simple percentages.

Results: Domestic violence was experienced by both sexes. Domestic violence was perceived from different experiences including mutual exclusion or restriction from participating in social functions after disclosure. Out of 45(46.9%) PLWHA that disclosed their status, 36(40%) experienced violence. Interventions suggested for reducing violence included theater plays in public places, providing job opportunities and others.

Conclusions: Results showed PRA as an efficient and cost effective method of planning strategies to reduce violence among PLWHA. Training programmes on risks of violence on HIV infection is needed for both sexes.

Introduction

People living positively with HIV/AIDS (PLWHA) especially women are likely to face risks of being beaten, chastised and other violence. In Nigeria, the Demographic Health Survey (2003) states that only 24% of married teenage women ever discussed their HIV status with their husbands. HIV Counselors encourage partner notification to promote safer sex practices and reduce further infection [1]. But most times, PLWHA report domestic violence after disclosure [2,3,4].

Most health surveys targeted at PLWHA including [5] have primarily focused on effects of violence on HIV/AIDS with little or no effort to include PLWHA when planning interventions for them. Nigerian demographic health surveys are therefore designed to determine the prevalence of violence among PLWHA so as to enable policy plannersto plan effectively. Policy planners and programme operators of these surveys are of the view that knowing more about demographics of PLWHA would enable them to plan adequately for interventions to improve their life. These kinds of survey could be problematic in that they aim to isolate social determinants of violence and cut-off levels without involving inputs from PLWHA who experience violence. Moreover, most of these surveys have been house-to–house. They could be expensive, time consuming, and may result in poor services and/or sustainability. These kinds of surveys have been reported as counterproductive especially when services are not followed up [6].

Study involved PLWHA in initiating feasible interventions to reduce domestic violence against them using participatory reservation approach (PRA). PRA framework as used in the study provoked PLWHA participation PRA is an important approach derived from agricultural surveys that have potentials for more effective sustainability [6]. PRA involves using affected people as active analysts of their own situation and to set priorities on how to change their situations.

PRA has a defined methodology and systematic learning process that stresses changes in behaviour and attitude of individuals through group inquiry and interaction. It is an important tool for planning, and evaluating health programmes as well as for identifying support in service delivery and gaining access to potential influences to community change [7,8]. This framework was used because it recognized views of PLWHA and empowered them to have a sense of ownership

to suggested intervention processes. It also enabled the author to gather information from PLWHA with participatory method procedures.

In Nigeria, social perceptions of domestic violence are viewed in context of cultural practices and beliefs in communities. Some communities see domestic violence as an incurable disease[9] while others see it as social problem influenced by religion, socio-economic status, and educational background[10]. These cultural beliefs and perceptions affect how PLWHA are treated as well as socially accepted in society. Negative attitudes of society toward HIV infection influence acceptance of PLWHA [11] and this gives rise to stigmatization of PLWHA[12,13].

Therefore determining how PLWHA with different cultural backgrounds perceive domestic violence could be a good indicator in assessing effectiveness of PRA in planning interventions to minimize violence.

Objectives

- To use PRA to assist PLWHA identify strategies to minimize domestic violence against them.
- To note conditions that encourage PLWHA disclosure of their HIV status.
- To identify factors that influence domestic violence against PLWHA

Method

Study used qualitative research method. This method helped to access PLWHA perceptions of domestic violence thereby facilitates their participation. Focus group discussions were used to explore views of each PLWHA on relevant interventions. Methodology in using the PRA framework is to initiate interventions that would transform society's negative attitudes and behaviour against PLWHA so as to attract changes that PLWHA in the situation would regard as improvement.

The researcher is of the view that interventions suggested by PLWHA using PRA would create more impact than others. The role of author in this study was to assist PLWHA to achieve the desired change using the interventions they suggested.

Study population:

Study was conducted with a total sample of 96 PLWHA in a network of PLWHA. The sample consisted of (56 females and 40 males) between the ages of 22-65 years.

Network of PLWHA was used because of the difficultly in identifying PLWHA in society. People are not willing to disclose names and addresses of PLWHA and PLWHA themselves are not disposed to disclose their sero-status. Moreover, the network is made up of PLWHA whose sero-statuses are already known.

Men were included in the study because they were thought to have valuable experiences and understanding that would enable them to suggest practical strategies for reaching other men in society. It was also to note the extent to which male PLWHA also experience violence.

Ethical considerations:

Permission to conduct the study was obtained from the President of the network of PLWHA in the State. His approval enabled the researcher to collect information from participants. Instruments used for study did not request the participants to write their names or anything to identify them. In addition, statements of confidentiality were given. Participants were given briefs on objectives of the study. Permission to tape-record the session was made and guaranteed.

Data collection:

Two methods of data collection, focus group discussion and interview guides were used. Interview guide was administered for illiterates and self-administered for literates. In all, 10 focus group discussions were conducted. Each focus group had 9-10 PLWHA. Focus group discussions were conducted through a trained moderator. All discussions were conducted in the local language to enable participants, even illiterates, to take active part in discussions. All discussions were tape-recorded. Participants were encouraged to talk freely among themselves. PLWHA were invited through their President to their regular meeting place. Open-ended and closed-ended questions characterized the format of the instruments.

Data Analysis

Focus group discussions were recorded, transcribed, and translated. Transcript notes were read and cross-checked. Recording equipment used was checked regularly to determine its reliability. Data were coded according to themes, and categorized. Analyses of data were manually done using qualitative and quantitative methods with simple percentages. For clarity, all related information was pooled together and reported.

Findings

Demographic variables of the sample:

The age distribution of the PLWHA varied. More than half, 49(51%) of the sample were between the ages of 29-42 years (see Table 1).

Table 1. Age distribution of the PLWHA

Age distribution	Frequency
22 - 28 years	13 (13.5%)
29 - 35 years	26 (27%)
36 - 42 years	23 (24%)
43 - 49 years	14 (14.6%)
50 - 56 years	15 (15.7%)
57 years and above	5 (5.2%)
Total	96 (100%)

Findings on the marital status of the sample show that a good number of them, 49(51%) are married. (See Table 2).

Table 2. PLWHA by marital status

Marital Status	Frequency
Married	49 (51%)
Separated /divorced	18 (18.8%)
Widowed	21 (21.9%)
Single	8 (8.3%)
Total	96(100%)

For level of schooling, the sample was made up of 8(8.3%) as illiterates, 47(49%) with primary education six and secondary, while 41(42.7%) have tertiary education. Also, 59(61.5%)

live in rural areas and 37(38.5%) live in urban areas. In all, 15(15.6%) of PLWHA made up of (11 females and 4 males) had sero-status discordant families.

Perceptions of domestic violence:

Domestic violence was perceived by PLWHA from three viewpoints; as physical, emotional and social problems. Finding shows that most PLWHA perceived domestic violence from the viewpoints of their experiences. However, during the focus group discussion, PLWHA from the rural areas could not see rape and/or extramarital sexual relationships as serious violence against them unlike those from the urban areas. In this study, participants saw domestic violence as a functional breakdown rather than by related causes. Table 3 contains various perceptions of domestic violence.

Table 3. PLWHA perceptions of domestic violence

Perceptions	Supporting data
Physical problems	Quarrelling, beating, battering, flogging, inflicted injury, chastisement, and fighting
Emotional problems	Neglect, stigmatization, isolation, rejection, humiliation, inequity and scolding
Social problems	Attempted murder, rape, extramarital-sex, ejection from matrimonial home, separation and/or divorce, lack of financial support,

Identified PLWHA with domestic violence:

One unique finding in this study is that both male and female PLWHA experienced domestic violence. A total of 65(67.7%) PLWHA experienced violence ranging from chastisement, flogging, beating, discrimination, use of abusive words, to attempted murder, but this was more on those who disclosed their sero-status than others. The finding shows that the main challenges PLWHA faced include whether or not to disclose their HIV status, who to disclose to, and if they eventually disclose, what the consequences would be. Out of 96 PLWHA studied, 35(36.5%) of them disclosed their sero-status to close relations and friends. Using the report of one PLWHA, "when my church pastor learned of my HIV status, he excluded me from church activities especially holy communion and he told other church members about my status and since then, I have never attended church functions." Another crucial finding in the study was the confusion of the PLWHA on whether or not to get married. The result of the focus group discussion showed that a good number of the PLWHA, especially the singles had the zeal of getting married and raising their own families.

Factors and/or conditions that increased violence: PLWHA identified five factors and/or conditions that encouraged violence. Table 4 contains the details.

Table 4. Factors that increase violence

Factors	Response category
Negotiating for condom use	38(39.6%)
Constant demand for financial support	21(21.9%)
Suspicion of sexual promiscuity	27(28.1%)
Constant episodes of ill-health	18(18.8%)
Refusal to have sex	12(12.5%)

Among the factors listed by PLWHA, negotiation for condom use was the commonest cause of violence against them. Using reports of five PLWHA, "once the issue of using a condom for sex is raised, there would be suspicion that the person has been going out with others. And from that time onwards, there will be no more peace." One important finding in this study is that both male and female gave this report, showing that violence occasioned by use of condom cuts across all sexes of PLWHA.

Another factor that influenced violence was demanding of financial assistance . Using the reports of three PLWHA, "there will be peace as long as one does not demand for money either for food or for drugs." Regrettably, a good number of the PLWHA complained of no meaningful means of livelihood and the few that had jobs reported setbacks in their respective businesses as a result of constant episodes of ill health.

Suggestions on strategies to reduce domestic violence:

There was an overwhelming desire on the part of PLWHA to suggest things that could discourage domestic violence. To express this desire, a good number of the PLWHA freely made suggestions, and justified the reasons why each suggested strategy is considered realistic and important for reducing domestic violence. This justification is considered strength to the study. Table 5 contains the summary of the suggested interventions.

Table 5. PLWHA and suggested strategies to minimize domestic violence

Suggested strategies	Frequency n=96
Theatre plays in public places (churches, markets, schools) to highlight the plights of PLWHA	54 (56.3%)
Providing job opportunities to encourage financial independence	69(71.8%)
Using male peer group to sensitize communities on their responsibilities	25 (26%)
Using influential adults to organize workshops/seminars on enlightenment in communities	44 (45.8%)
Using communication devices (media, town criers, radio, etc.) to create awareness on benefits of disclosure	19 (19.8%)
Giving regular counseling to family members	28 (29.2%)
Total	180 (100%)

*** *Multiple choices*

From this Table, encouraging financial independence and organizing theater programs in markets, churches and other public places were the popular strategies suggested. PLWHA stressed that providing them with job opportunities would increase their income generating potentials thereby reduce over dependence on others, thereby reduce unnecessary use of uncomplimentary words on them by relations. Further, PLWHA explained that theater plays would be beneficial if the programmes concentrate on information on gender sensitivity, skills for anger management, and decision-making. According to them, the essence of the strategy is to reach individuals of various classes in the society. PLWHA's suggestion on the need to use male peer groups to sensitize the communities was aimed at encouraging gender equity as well as creating situations that would enable females to express their problems openly. The idea PLWHA gave for advocating use of influential adults to organize workshops/

seminars in communities is to enable influential adults to sensitize individuals on the effects of violence on HIV infection. These suggestions point towards practical ways and opportunities PLWHA perceived would reduce domestic violence.

Discussion

The study shows that PRA is useful in identifying PLWHA with domestic violence. However, there were discrepancies on what constituted domestic violence. While PLWHA from urban areas viewed rape and extramarital sex as domestic violence, PLWHA from rural areas did not. They saw extramarital sexual relationships as men's way of life. From perspectives of social, physical, and emotional problems, PLWHA viewed domestic violence in terms of restricted activity and participation in social functions. This finding agrees with that of [4,5] that stigmatization and rejection dominated life experiences of PLWHA, and that they view their life along this way. This implies that stigmatization (restrictiveness) is a major concern of PLWHA, especially females.

Surprisingly, male PLWHA who are traditionally major decision makers, also experienced domestic violence like females. This finding suggests that social welfare of these males like that of females is neglected. However, the fact that both sexes experienced violence is a significant finding. This finding underlies challenges that each sex had .

Two popular strategies dominated suggestions of PLWHA. These are providing job opportunities to encourage financial independence 69(71.8%), and organizing theatre plays in public places 54(56.3%). These suggestions reflected challenges PLWHA encountered in their life experiences.

One unique benefit of this study is that PRA encouraged consensus among PLWHA. It ensured cohesiveness and flow of quality information. Similar findings were reflected in the study of [14].

The time span for this study was limited. There was no time allotted for evaluating and monitoring the outcome of all interventions suggested. However, it could be noted that using PRA approach proved fast and inexpensive way of identifying practical activities for reducing domestic violence against PLWHA. The speedy nature of identifying problems using PRA was also highlighted in the studies by [1, 6, 14]. It could be argued that using PRA in this study served as an educational intervention method. PRA enabled PLWHA to have a better understanding of interventions that are capable of minimizing violence as well as their roles in the sustainability of interventions suggested. Study showed that 36.5% of PLWHA disclosed their HIV status. This figure is higher than that of 24% found in Nigeria by [5]. This increase in proportion of PLWHA who disclosed their sero-status is of advantage to HIV prevention and could be partly due to the increased number of people who are recently joining the network of PLWHA where they attract care and support from each other. The commonest factor that encouraged domestic violence among PLWHA was negotiation for condom use. Negotiation for condom use occasioned suspicion for sexual promiscuity. This finding is disturbing because of negative reactions that followed the word 'condom' among\participants. Participants complained of experiencing violence on mere mention of condom use. This\ attitude might have partly stemmed from traditional belief that condom use is synonymous with sexual immorality. This could be partly why a good number of PLWHA took risks of having sex without a condom. The finding that negotiation for condom use encouraged violence agrees with the findings of [4].

The fact that PLWHA lacked financial support shows the extent to which relations and others provide care and support. Expecting PLWHA with no meaningful means of livelihood to support self and other \ dependents, is arguably domestic violence. This trend of argument is in line with that of [3,11],that abandonment falls under the ambit of domestic violence. Instigating violence against PLWHA just because of spells of ill-health would further expose them to untold hardship. The best approach to improve health of PLWHA is to provide them with good nutrition and also make treatment facilities accessible and affordable.

Conclusion

From types of domestic problems PLWHA encountered, and interventions they suggested, it could be safe to assume that they were exposed to traumatic situations. Including theatre plays in public places among strategies to reduce violence had some advantages. Theatre plays are broad-based with some feasible psychological undertone (debriefing), needed in conflict management. It may not be an illusion to state that theatre plays promoted coherence in PLWHA social interactions. Findings point to clear need for counseling and health education which would emphasize benefits of conflict management, condom use, and disclosure of HIV status. To ensure community involvement and sustainability of the programme, the suggested strategies should be integrated into the primary health care system.

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Efficacy of Antibiotics in Women with Symptoms of Urinary Tract Infection but Negative Dipstick Urinalysis: Prospective Randomized Controlled Trial

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Abstract

Background: Infections of the urinary tract are extremely common.

Urine testing with dipsticks that detect the presence of leukocyte and nitrites is commonly used in primary care to predict the subsequent diagnosis of urinary tract infection as determined by standard midstream urine leukocyte and nitrites in turbid urine, had a positive predictive value of finding pure growth on subsequent culture of around 66%2. Conversely, a negative dipstick for both leucocytes and nitrites has a negative predictive value of finding a pure growth on subsequent culture of 80-98.5 %(1, 2).

Objective: To assess the effectiveness of antibiotic treatment of women with symptoms of urinary tract infection but negative urine dipstick testing.

Design: Prospective, Randomized Controlled trial.

Setting: Obstetrics and Gynaecology clinic at Prince Hashim Bin Al-Hussein hospital, Zarka, Jordan.

Participants: 59 women aged 16-50 years presenting with a history of dysuria and frequency in whom dipstick test of midstream urine was negative (tested for proteinuria, glycosuria, leucocytes, red blood cells, cellular casts and nitrites).

Intervention: Trimethoprim 300 mg daily for three days or placebo. Outcome Measures: self reported diary of symptoms for seven days, recording the presence or absence of individual symptoms each day. The main clinical outcome was resolution of symptoms.

Results: the median time for resolution of dysuria was three days for trimethoprim compared with five days for placebo (p=0.002). At day 3, five (24%) of patients in the treatment group had ongoing dysuria, compared with 20 (74%) in the placebo group (p=0.005). This difference persisted until day 7: two patients (10%) in the treatment group v 11(41%) in the placebo group (p=0.02). The median duration of constitutional symptoms (fever, shivering) was reduced by four days.

Conclusion: although negative dipstick test accurately predicted absence of infection when standard microbiological definition was used (negative predictive value 92%), it did not predict response to antibiotic treatment. Three days' treatment with trimethoprim significantly reduced dysuria in women whose urine dipstick test was negative. These results support the practice of empirical antibiotic use guided by symptoms.

Introduction

Infections of the urinary tract are extremely common. Because the symptoms of dysuria and frequency are unpleasant, doctors are under pressure from patients to provide relief [1,2]. However, not all such symptoms are associated with growth of bacteria in a standard midstream urine specimen. More detailed microbiological investigation of women with apparently negative urine culture on standard testing indicate that a proportion of them have low count bacteriuria [3]. Urine testing with dipsticks that detect the presence of leukocyte and nitrites is commonly used in primary care to predict the subsequent diagnosis of urinary tract infection as determined by standard midstream urine leukocyte and nitrites in turbid urine, had a positive predictive value of finding pure growth on subsequent culture of around 66%[2]. Conversely, a negative dipstick for both leucocytes and nitrites has a negative predictive value of finding a pure growth on subsequent culture of 80-98.5% [1,2].

The approach to women with symptoms of uncomplicated urinary tract infection and positive urine dipstick results is to give empirical antibiotic treatment[4-6]. Recommendation for the treatment of women with symptoms and negative dipstick results vary. Some suggest empirical treatment[7], but others do not[4,5,8]. We carried out a pragmatic trial of antibiotic compared with placebo in women with symptoms of uncomplicated urinary tract infection and negative dipstick result.

Method

We designed the study as a prospective randomized placebo controlled trial. The intervention was treatment with trimethoprim 300 mg daily for three days. 59 women aged between 16-50 were randomly chosen from women with symptoms of urinary tract infection and who attended the

gynaecology clinic at Prince Hashim Bin Al-Hussein hospital.

All the women who agreed to participate provided a midstream urine specimen tested immediately with a standard urine dipstick and then sent for microbiological examination and culture. We randomly allocated a patient whose dipstick test was negative to receive either three days of trimethoprim 300 mg (standard treatment) for those with even military identification numbers, or placebo for those with odd numbers.

Those women were asked about current symptoms, the presence or absence of dysuria, increased urinary frequency, low back pain, abdominal pain, appearance of blood in the urine, itching, and feeling hot or shivery. Women were also asked about potential risk factors for infection, including use and type of contraceptives, recent sexual activity, past history of infection, and use of other preparations to alleviate symptoms. Participants received a seven-day diary to record their symptoms. They recorded the presence or absence of individual symptoms each day. Where a symptom was absent and had been recorded as present on the day 1 of the questionnaire, we asked the woman to recall the day on which the symptom resolved. Adverse effects potentially related to medication and any other treatments taken were recorded. We asked participants to provide a second midstream urine specimen for microbiological examination and culture.

The main outcome was resolution of dysuria in the intervention and control groups at three and seven days and median time to resolution. Secondary outcomes were resolution of other symptoms. We investigated predictors of response to treatment. The study was powered to detect clinically important differences between the two groups. With 30 participants in each arm, using $\alpha 2=0.05$ the study has 78% power to show a difference between groups if the true rates are such that symptoms will not resolve in only 10% of women taking antibiotics compared with 40% of women taking placebo. This sample size has 99% power to detect a difference between groups if the true state is such that symptoms will not resolve in only 25%of women taking antibiotics compared with 75% of women taking placebo.

Among all women who reported dysuria on day 1, the median time for resolution of dysuria was three days in the trimethoprim group and five days in the placebo group (p=0.002). At day three, 24.5% of patients in the treatment group who had dysuria on day one still had dysuria compared with 74% of the placebo group (p=0.005); this difference was still present at day 7, when only 10% of the treatment group who reported dysuria on day 1 were experiencing dysuria compared with 41% of the placebo group (p=0.02). Less than a third of the patients in each group experienced constitutional symptoms of feverishness or shivers. However, among those who had symptoms, the median time from clinical presentation and treatment initiation to resolution of feverishness or shivers was two days in the trimethoprim arm, compared with six days in the placebo arm (p=0.02). At day three, 46.5% of patients in the placebo group were still feeling hot and shivery compared with none of the treatment group (p=0.04).

Discussion

Compared with placebo, administration of trimethoprim notably shortened the median duration of dysuria in women with symptoms of uncomplicated urinary tract infection in whom dipstick results were negative. For those women who reported dysuria at baseline, the duration of dysuria from the time of clinical presentation was shortened by a median of two days. Four women needed to be treated with trimethoprim to shorten the duration of symptoms, for one woman, (number needed to treat=4). Similarly, the median duration of constitutional symptoms indicating infection (feverishness, shivers) was reduced by four days. The duration of any other symptoms did not differ. These results indicate a bacterial or other infectious cause for the symptoms, that was missed by dipstick testing and standard testing in a diagnostic laboratory. The resolution of symptoms that generally accompany infection (feeling feverish or shivery) would provide some support for an atypical or occult infective cause, implying that these women do not have urethral syndrome, a diagnosis of exclusion.

It is known that a past history of urinary tract infection also increases the risk of subsequent infection, and 90% of the women in the sample reported a past history of similar symptoms.

Although negative dipstick results are useful in predicting which women aged 16-50 presenting with symptoms of urinary tract infection will have a negative urine culture, these results show that it does not follow that this will predict response to antibiotic treatment. Further clinical and microbiological study of the group of women who seem not to have infection yet whose symptoms are relieved more quickly with a short course of trimethoprim is needed to understand the aetiology of symptoms in this group. At a population level, a need also exists to find a more discriminating way to avoid unnecessary antibiotic exposure in all women presenting with symptoms of urinary tract infections9.

Conclusions

Although negative dipstick test accurately predicted absence of infection when standard microbiological definition was used (negative predictive value 92%), it did not predict response to antibiotic treatment. Three days' treatment with trimethoprim significantly reduced dysuria in women whose urine dipstick test was negative. These results support the practice of empirical antibiotic use guided by symptoms.

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The clinical evaluation of herbal anti-malarial medicine: SCAT

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Key words: Malaria, Plasmodium vivax, Plasmodium falciparum.

Abstract

The open, clinical, randomized trial has been carried out on the designed, proprietary clinically and proven different anti-malarial medicines to analyze their efficacy and side effects. A random controlled clinical trial was conducted to quantify the effect of coded herbal formulation SCAT with Qurs Bukhareen, Qurs Humma Jadeed and Amodiaquine ain endemic areas of Bund Murad near Hamdard University, Karachi and the urban population of Karachi. Patients at Matab Hamdard Aram Bagh and Shifa-ul-Mulk Memorial Hospital For Eastern Medicine were included in this clinical study. The duration of treatment was from January 2001 to June 2004.

The drugs were prescribed to 264 patients categorizing them into different agse from 10 years to 63 years. Three selected drugs were administered to attain a successful response to malaria, especially caused by Plasmodium vivax and Plasmodium falciparium. Herbal formulation SCAT was administered to 88 patients, among them 56 patients who were suffering from Plasmodium vivax and 32 who were suffering from Plasmodium falciparum. In the Amodiaquine group 75 patients were treated, with 41 of Plasmodium vivax and 34 patients from Plasmodium falciparum infected malaria. Qurs Humma Jadeed was evaluated on 56 patients, 42 from Plasmodium vivax and 14 patients from Plasmodium falciparum infected cases. Similarly Qurs Bukhareen was given to 45 patients, 35 of Plasmodium vivax and 10 patients screened for Plasmodium falciparum. The response of the treatment on symptomatology of malaria such as rigors, bitter taste in mouth, headache, anorexia, nausea, vomiting, malaise, myalgia, abdominal pain, burning micturition, splenomegaly and hepatomegaly were also analyzed.

A comparative evaluation of the anti-malarial treatment by other medicine shows that Unani therapy is safer and proficient in its activity. After statistical analysis Coded formulation SCAT was remarkably effective for the associated malarial symptoms. Coded formulation SCAT was more cost effective than the other medicines. The statistical analysis through chi-square test ($p< 0.05$) significantly proved the SCAT efficacy. The statistical analysis of all the variables conclusively proved that SCAT has furnished overall good efficacy, more suitable and superior for the prevention and treatment of malaria. The clinical data generated clearly proved that SCAT is the drug of choice for malaria especially caused by Plasmodium vivax and Plasmodium falciparum.

Objective: To evaluate the efficacy and side effects of herbal coded medicine "SCAT Capsule" for the treatment of malaria along with a comparative study of other herbal medicines Qurs Humma Jadeed and Qurs Bukhareen, an allopathic medicine Amodiaquine Tablet.

Aim of Study: Malaria is a public health problem in Pakistan and increasing trends have been observed in the last two decades. The bulk of malaria-related morbidity and mortality in endemic areas like Pakistan is concentrated in children below the age of 5 years and in pregnant women. To reduce the risk of malarial disease an appropriate effective curative and prophylactic treatment is required. Herbal treatment SCAT Capsule is an economical, safe and effective anti-malarial treatment. The purpose of this study was to prove the efficacy and safety of herbal medicine.

Introduction

Malaria is a disease of the blood that is transmitted to people by infected mosquitoes. Malaria is very common throughout the world. In Pakistan, the main risk is at home and to persons traveling to tropical and subtropical countries where malaria is more prevalent. Malaria is caused by any one of four species of one-celled parasites, called *Plasmodium*. The parasite is spread to people by the female *Anopheles* mosquito, which feeds on human blood. Although four species of malaria parasites can infect humans and cause illness, only malaria caused by ***Plasmodium falciparum*** is potentially life threatening. A person gets malaria from the bite of an infected female mosquito. The mosquito bite injects young forms of the malaria parasite into the person's blood. The parasites travel through the person's bloodstream to the liver, where they grow to their next stage of development. In 6 to 9 days, the parasites leave the liver and enter the bloodstream again. They invade the red blood cells, finish growing, and begin to multiply quickly. The number of parasites increases until the red blood cells burst, releasing thousands of parasites into the person's bloodstream. The parasites attack other red blood cells, and the cycle of infection continues, causing the common signs and symptoms of malaria. Malaria caused by ***Plasmodium falciparum*** can cause kidney or liver failure, coma, and death. Although infections with other malaria parasites cause less serious illness, parasites can remain inactive in the liver and cause a reappearance of symptoms months or even years later.

The seriousness of the worldwide re-emergence of malaria is made worse by the spread of parasites that are resistant to anti-malaria drugs. Parasites, like bacteria and viruses, can develop resistance to the drugs used to prevent or treat infection. Malaria parasites are increasingly resistant to chloroquine, the drug most widely used for prevention and treatment. Chloroquine-resistant strains have been reported from areas in Africa, Asia,

and the Americas. Pakistan is anexception for drug resistance [1]. Thus, alternative anti-malarial drugs are needed urgently. Coded herbal formulation SCAT Capsule has yet to be registered however it does have anti-malarial action. Therefore, there is a great need of a safe drug that has less resistance with good efficacy. After an extensive bioactivity literature search from NAPALERT data coded herbal formulation SCAT is designed [2,3,4,5]. SCAT Capsule is a combination of four plants named as; *Artemisia vulgaris* (Afsanteen), *Sisymbrium irio* (Khaksi), *Tinospora cordifolia* (Satgilo) and *Caesalpinea bonducela* (Karanjwa).

Patients were administered drugs daily for two weeks. The treatment groups were assigned the following regimens: group 1, SCAT Capsule Cap (two capsules twice daily); group 2, Amodoquine (two tablets twice daily); group 3, Qurs Humma Jadeed (one tablet thrice daily) and group 4, Qurs Bukhareen (one tablet thrice daily). All the patients then joined one of the active treatment groups according to randomization. Randomization was performed by the research investigator and was from a computer-generated table of numbers in permuted blocks of five. Patients were allocated treatment sequentially in order of study numbers.

Results and Discussion

Comparative study between SCAT and the other drugs such as Amodiaquine, Qurs Humma Jadeed, and Bukhareen exhibit the anti-malarial effects on *Plasmodium vivax*. A comparative evaluation of the anti-malarial treatment by other medicine shows that Unani therapy is safer and proficient in its activity. After statistical analysis Coded formulation SCAT was remarkably effective for the associated malarial symptoms. The statistical analysis through chi-square test ($p < 0.05$) significantly proved the SCAT efficacy. In the statistical analysis of all the variables it was conclusively proved that SCAT has furnished overall good efficacy, more suitable and superior for the prevention and treatment of malaria. The clinical data generated, clearly proved that SCAT is the drug of choice for malaria especially caused by *Plasmodium vivax* and *Plasmodium falciparum*.

Table 1. Comparative data for the complaint of RIGORS (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	87%	13%	0%
Amodiaquine	87%	13%	0%
Qurs Humma Jadeed	79%	17%	4%
Qurs Bukhareen	41%	21%	38%

Table 2. Comparative data for the complaint of BITTER TASTE IN MOUTH (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	88%	12%	0%
Amodiaquine	81%	19%	0%
Qurs Humma Jadeed	81%	15%	4%
Qurs Bukhareen	27%	23%	50%

Table 3. Comparative data for the complaint of HEADACHE (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	70%	30%	0%
Amodiaquine	81%	19%	0%
Qurs Humma Jadeed	86%	14%	0%
Qurs Bukhareen	0%	44%	56%

Table 4. Comparative data for the complaint of ANOREXIA (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	84%	16%	0%
Amodiaquine	93%	7%	0%
Qurs Humma Jadeed	83%	17%	0%
Qurs Bukhareen	13%	25%	62%

Table 5. Comparative data for the complaint of NAUSEA (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	86%	14%	0%
Amodiaquine	93%	7%	0%
Qurs Huma Jadeed	80%	13%	7%
Qurs Bukhareen	24%	19%	57%

Table 6. Comparative data for the complaint of VOMITTING (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	78%	22%	0%
Amodiaquine	100%	0%	0%
Qurs Humma Jadeed	92%	8%	0%
Qurs Bukhareen	0%	75%	25%

Table 7. Comparative data for the complaint of MYALGIA (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	73%	27%	0%
Amodiaquine	88%	12%	0%
Qurs Humma Jadeed	88%	12%	0%
Qurs Bukhareen	17%	17%	66%

Table 8. Comparative data for the complaint of SWEATING (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	73%	27%	0%
Amodiaquine	88%	12%	0%
Qurs Humma Jadeed	88%	12%	0%
Qurs Bukhareen	17%	17%	66%

Table 9. Comparative data for the complaint of MALAISE (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	88%	12%	0%
Amodiaquine	83%	17%	0%
Qurs Humma Jadeed	77%	18%	5%
Qurs Bukhareen	35%	23%	42%

Table 10. Comparative data for the complaint of PUFFINESS IN FACE AND LIDS (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	100%	0%	0%
Amodiaquine	100%	0%	0%
Qurs Humma Jadeed	0%	0%	0%
Qurs Bukhareen	0%	0%	0%

Table 11. Comparative data for the complaint of ABDOMINAL PAIN (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	57%	43%	0%
Amodiaquine	100%	0%	0%
Qurs Humma Jadeed	50%	50%	0%
Qurs Bukhareen	50%	0%	50%

Table 12. Comparative data for the complaint of ABDOMINAL PAIN (Plasmodium vivax)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	75%	25%	0%
Amodiaquine	50%	50%	0%
Qurs Humma Jadeed	75%	25%	0%
Qurs Bukhareen	0%	40%	60%

Table 13. Comparative data for the complaint of RIGORS (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	97%	3%	0%
Amodiaquine	97%	3%	0%
Qurs Humma Jadeed	71%	21%	8%
Qurs Bukhareen	33%	33%	34%

Table 14. Comparative data for the complaint of BITTER TASTE IN MOUTH (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	96%	4%	0%
Amodiaquine	90%	10%	0%
Qurs Humma Jadeed	69%	23%	8%
Qurs Bukhareen	28%	29%	43%

Table 15. Comparative data for the complaint of HEADACHE (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	96%	4%	0%
Amodiaquine	84%	16%	0%
Qurs Humma Jadeed	63%	25%	12%
Qurs Bukhareen	33%	50%	17%

Table 16. Comparative data for the complaint of ANOREXIA (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	95%	5%	0%
Amodiaquine	93%	7%	0%
Qurs Humma Jadeed	67%	33%	0%
Qurs Bukhareen	40%	40%	20%

Table 17. Comparative data for the complaint of NAUSEA (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	100%	0%	0%
Amodiaquine	86%	14%	0%
Qurs Humma Jadeed	80%	20%	0%
Qurs Bukhareen	43%	43%	14%

Table 18. Comparative data for the complaint of VOMITING (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	100%	0%	0%
Amodiaquine	75%	25%	0%
Qurs Humma Jadeed	100%	0%	0%
Qurs Bukhareen	75%	25%	0%

Table 19. Comparative data for the complaint of MYALGIA (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	100%	0%	0%
Amodiaquine	94%	6%	0%
Qurs Humma Jadeed	67%	33%	0%
Qurs Bukhareen	50%	25%	25%

Table 20. Comparative data for the complaint of SWEATING (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	97%	3%	0%
Amodiaquine	87%	13%	0%
Qurs Humma Jadeed	69%	23%	8%
Qurs Bukhareen	33%	44%	23%

Table 21. Comparative data for the complaint of MALAISE (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	97%	3%	0%
Amodiaquine	87%	13%	0%
Qurs Humma Jadeed	67%	25%	8%
Qurs Bukhareen	37%	38%	25%

Table 22. Comparative data for the complaint of ABDOMINAL PAIN (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	86%	**14%**	0%
Amodiaquine	67%	33%	0%
Qurs Humma Jadeed	100%	0%	0%
Qurs Bukhareen	0%	50%	50%

Table 23. Comparative data for the complaint of BURNING MICTURITION (Plasmodium falciparum)

Level of Improvement	Complete Improvement	Slight Improvement	No Improvement
SCAT	91%	9%	0%
Amodiaquine	75%	25%	0%
Qurs Humma Jadeed	100%	0%	0%
Qurs Bukhareen	67%	0%	33%

Conclusion

Coded formulation SCAT that was utilized in Unani Medicine was proved effective for the treatment and prevention of parasitic disorder like malaria caused by Plasmodium vivax and Plasmodium falciparum. Coded formulation SCAT also provided hepato-protective as well as spleno-protective support. So in this context it is proved as a safe medicine. A comparative evaluation of the anti-malarial treatment by other medicine shows that Unani therapy is safer and proficient in its activity. The data presented in the dissertation showed that Coded formulation SCAT was also effective against malarial resistant strains and it does not produce resistance to the treatment. After statistical analysis Coded formulation SCAT was remarkably effective for the associated malarial symptoms. Coded formulation SCAT was more cost effective then the other medicines.

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Surgical Management of Post Carbuncle Soft Tissue Defect in Diabetic Patients

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Keywords: carbuncle, skin graft, skin flap

Abstract

Skin carbuncle is a necrotizing infection of the skin and subcutaneous tissues, composed of a cluster of furuncles, usually due to Staphylococcus aureus, with multiple drainage sinuses. People with diabetes are more likely to develop carbuncles. Broad-spectrum antimicrobial agents, in conjunction with surgical intervention, are often necessary to eradicate these infections. In this study we present our local experience in the surgical management of post carbuncle soft tissue defects in diabetic patients. The results of the treatment of 27 patients with a carbuncle of various locations were analyzed retrospectively. Twenty-seven patients had surgical reconstruction of a large post carbuncle soft tissue defect with split thickness skin grafts (63%) and local transposition flaps (37%). Both skin grafts and local flaps are good alternatives in the coverage of such defects. However skin flaps provide better cosmetic appearance than skin grafts.

Introduction

Carbuncle is an infection of cutaneous and subcutaneous tissue that consists of a cluster of boils [1-4]. The infection can occur when a cut, wound, friction, pressure, or moisture forces the bacteria deeper into the skin or hair follicle. Carbuncles are often found on the back of the neck, shoulders, hips and thighs, and they are especially common in middle-aged or elderly men. Commonly, the causative agent is Staphylococcus aureus[4]. Also, with a diagnosis of carbuncle, it is important to consider whether there is an underlying condition causing carbuncle, such as diabetes mellitus [5-10]. The elevated serum glucose levels of diabetics affect traditional host defenses, predisposing these individuals to infectious processes. The diabetic patient is also faced with disturbance of their immune systems which can alter host defense mechanisms and increase the risk of infection [10]. Infections in diabetics can be severe and life-threatening, and only through the prompt recognition and treatment of these disorders can morbidity and mortality be avoided.

Appropriate treatment principles consist of adequate surgical drainage of pus, excision of all necrotic tissues and adequate coverage with broad spectrum antibiotics.

In certain cases where there are large soft tissue defects following surgical debridement of the localized skin infection, direct surgical closure is not possible. In this case surgical closure requires either skin grafting or local transposition of nearby skin flaps. Choice of surgical tissue coverage depends on the soft tissue size, location, and involvements of major body vital structures. Split thickness skin grafts are simple and heal faster. Patients, however are not always satisfied with theire aesthetic skin results. Localized skin flaps provide a better choice for skin and soft tissue coverage of post carbuncle defects.

Methods & Results

The data consists of all diabetic patients transferred and admitted from 2002 till 2006 with a diagnosis of post carbuncle soft tissue defect. There were 27 patients; 19 male (70%) and 8 female (30%). The average age was 52 years old. The post carbuncle soft tissue defect was larger for direct primary closure, as shown in Figs 1-4. The most common bacterial organism was Staphylococcus aureus. In a few patients, mixed bacterial organisms were seen with gram negative and methicillin resistant Staphylococcus aureus (MRSA). Each patient received a full course of intravenous broad spectrum antibiotic, based on the organism sensitivity laboratory results. Split-thickness skin grafting was performed in the majority of cases (63%) (Fig 3) whereas local transposition skin flaps was performed in (37%) (Fig 4). All skin grafts and local skin flaps healed without significant healing complications.

Discussion

Skin carbuncle is a skin infection larger than a boil and with several openings for discharge of pus. The main causative organism of carbuncle is by a bacterium, Staphylococcus aureus, which infects an area under the skin or in a hair follicle. [1-3] Carbuncles occur more often in men because of their more extensive body hair growth [4]. A differential approach to choice of surgical method with consideration of the degree, phase and localization of inflammation is preferable. Early and radical surgery, antimicrobial drugs, and infusion therapy, provide up-to-date and adequate treatment. All of these infections are typically diagnosed by clinical presentation and treated empirically. If antibiotics are required, one that is active against gram-positive organisms such as penicillinase-resistant penicillin's, cephalosporins, macrolides, or fluoroquinolones should be chosen. Children, patients who have diabetes or patients who have immunodeficiencies are more susceptible to gram-negative infections and may require treatment with a second- or third-generation cephalosporin.

Diabetes mellitus is believed to increase susceptibility to infectious diseases [5-9]. The effects of hyperglycemia per se on infectious disease risk are unknown and the influence of diabetes on infectious disease outcome is controversial. The production

of humoral antibody appears intact, defective function of the polymorphonuclear leucocytes has been demonstrated [9-10].

Successful treatment of infections in the diabetic requires early and exact diagnosis, the exhibition of the correct antimicrobials, the treatment of the diabetic state and associated disorders and prompt surgical intervention where required. Good control of blood glucose in diabetic patients is a desirable goal in the prevention of certain infections and to ensure maintenance of normal host defense mechanisms that determine resistance and response to infection [10].

In certain cases, large soft tissue defects exist following surgical excision of the carbuncle. Such defects require soft tissue coverage, once the infectious process has settled. Split thickness skin grafts serve as a simple quick surgical solution for certain defects, however, local flaps can cover such defects effectively with better cosmetic results than split thickness skin grafts.

Conclusion

Carbuncle in diabetic patients can result in significant soft tissue defects of the involved skin region. Following proper diagnosis and management, surgical reconstruction of such defects can be simple with skin grafts. However, transposition of local skin flaps gives better durable soft tissue coverage with better cosmetic outcome.

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Fig 1. Skin carbuncle-nape of the neck

Fig 2. Multiple skin carbuncle - Back

Fig 3-a Chest carbuncle

Fig 3-b Chest carbuncle following closure with skin graft

Fig 4-a Back carbuncle- Outline of Limberg transposition skin flap

Fig 4-b The soft tissue defect after closure with local transposition flap

Environmental predictors for high blood Lead levels among women of childbearing age in Mosul city

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Abstract

Low dose exposure to lead is a well-known risk factor for spontaneous abortion in pregnancy and neurological fetal damage may be encountered at blood lead levels (BLL) as low as 5- 10 µg/dl. This fact highlights the importance of prenatal testing for potential lead exposure and of identifying factors related to such a high-risk exposure in women during childbearing age. Mosul City in Northern Iraq suffers many environmental health problems among which is the environmental lead pollution from different sources. This study evaluated the problem of lead exposure among (306) non-pregnant women of childbearing age in the city and investigated the possible association with certain socio- demographic and household characteristics. They were chosen by systematic sampling randomization throughout July 2006.

Blood lead levels were measured using Lead Care Testing System and Lead Care Blood Lead Test kits (ESA, Inc., USA) utilizing a (50 µl) whole blood specimen for each case. The cut-off point used to categorize women into those with normal and those with high BLL(s) was 10 µg/dl. The overall mean BLL value was (5.26± 3.33 µg/dl). Those with BLL= 10 µg/dl represented 8.5% of the total study sample.

The study revealed no significant association between high BLL(s) and socio-demographic characteristics such as maternal age, occupation, smoking exposure, or husband's occupation, however a significant association existed with frequent application of - the eye cosmetic- kohl (p= 0.05). More than 70% of women with high BLL(s) were frequent users of this material. They were two times more prone to develop BLL = 10 µg/dl (OR= 2.46, p= 0.05, 95% CI= 1.02- 5.96).

Meanwhile, the comparison of household characteristics of women studied by BLL revealed a highly significant association between increasing BLL and potential housing characteristics including age of household, its location and presence of peeling and chipping paint. Stepwise logistic regression model for the predictors of high BLL showed that elevated BLL(s) were associated with location of household (p= 0.002, Exp(B)= 6.820), age of household (p= 0.004, Exp(B)= 6.791), and presence of peeling and chipping paint (p= 0.006, Exp(B)= 6.253).

In conclusion, lead exposure is still an important public health problem in Mosul City and the major predictors for high BLL(s) include the location of the household in relation to traffic density and home characteristics namely age of home and/or presence of chipping paint.

Introduction

Lead is an ancient metal. Because of its malleability and low melting point, humans have used lead since prehistoric times to make statues, jewellery, water pipes and drinking vessels. The quantity of lead used since 1940 surpasses the total used in all previous centuries. This heavy recent use reflects industrial applications as well as the use of lead as a fuel additive. In the mid-1970s, nearly 200,000 tons of lead were consumed annually in gasoline in USA [(1)]. Virtually all of this lead was emitted into the environment from vehicles in a fine particulate form and caused widespread contamination of air, dust, soil, drinking water and food crops [(2)].

Although USA and the European Union have banned lead as an additive to consumer fuel for road-going vehicles, in some instances leaded petrol is still permitted for off-road uses such as in farming equipment, marine engines and airplanes. Lead continues to be used in petrol in many countries because it is a relatively inexpensive method for boosting octane. As of 2004,

leaded petrol was still being sold in Indonesia, the Middle East, the former Soviet-Republic, Cuba, parts of South America, and nearly all of Africa [3].

Thus, due to excessive use of lead in industry and automobile fuel, human beings have been, and are constantly being, exposed to it. This exposure adversely affects the functions of several organ systems including cardiovascular, renal, nervous, hemopoietic, endocrine and skeletal systems [4, 5].

In women, lead at high doses can be toxic to reproductive functions. Clinical reports, most of them from the first half of the 20th century, describe an increased incidence in spontaneous abortion among female lead workers as well as in the wives of male lead workers. Low level maternal lead exposure may increase the risk of spontaneous abortion [6]. Since the placenta does not offer any restrictive barrier to the transfer of lead from maternal blood to the fetal blood, the developing fetus may be exposed to the adverse effects of lead [7]. The difficult problem in the reproductive toxicity of lead is the finding that lead may cause neurological damage to the fetus at blood levels as low as 5- 10 µg/dl [8]. This problem is further compounded by the fact that under the metabolic stress of pregnancy, lead may be mobilized from bony stores of the mother to enter her blood and thus the fetal circulation [9].

In Iraq there were several studies performed about BLL which covered different community groups with high risk of exposure, such as traffic police men, car services station workers, battery repairers, petroleum station workers, electrical generator workers, and printing industry workers [10- 12]. However, no study was conducted to cover population with assumed low exposure, particularly females of childbearing age. Thus, the purpose of this work was to evaluate the BLL among a sample of married non-pregnant females of childbearing age in Mosul city, and to investigate the possible association of certain risk factors.

Subjects and Methods

Prior to data collection final approval was obtained from Ninevah Health Office to conduct the study. Al- Hadbaa primary health care training center was the focal point of this study. It is situated on the right side of Mosul city, near Mosul Medical College. It was established in September 1989 and nominated as a training center by WHO in 1997. It serves a wide catchment area of 60,390 population of various socio-economic and educational strata.

The unit of the present study was a healthy non–pregnant mother (age 15-49 years) who came to the center for vaccination of any of her children, and who had lived in Mosul city for more than three years. The chosen mothers were included by systematic sampling randomization in which every third mother was taken. This process yielded 306 non- pregnant mothers at childbearing age, all of whom were assessed during a one month period (July 2006). All women were asked to participate in the study and none of them refused. They were interviewed by one of the investigators who was well-trained about the method of interview. This was carried out via especially designed questionnaire form containing information about socio-demographic characteristics and some risk factors of lead exposure (e.g. traffic density at their residence, occupation, education, occupation of the husband, smoking exposure (passive-active), age of the building they live, and use of kohl).

Blood lead level was measured using Lead Care Blood Testing System and Lead Care Blood Lead Test Kits purchased from (ESA, Inc., USA). This system relies on electrochemistry and a sensor to detect lead in the whole blood where the kit is specific for quantitative measurement of lead in fresh whole blood specimens only. A sufficient whole blood sample was obtained from a skin-puncture using a finger stick. The lateral side of the middle finger was used. The puncture side was properly wiped clean with alcohol wipes already supplied with the system. A special heparinized capillary tube that allows collecting exactly (50 µl) of whole blood was used. The accuracy and precision of the test depended on accurately measuring a 50 µl blood sample. For each test, the exact 50 µl whole blood sample was dispensed from the capillary tube into the treatment reagent tube using special plungers. Mixtures in the treatment in reagent tubes were kept refrigerated until analyzed for BLL in weekly batches. Analyses were made at the Environmental Health Unit in Mosul Medical College.

The performance of the Lead Care System was checked on each batch run using appropriate quality control materials, i.e. both high and low known readings lead standards by Lead Care as well. Results obtained on control samples were within the expected range.

Data were analyzed with a statistical package for social sciences (SPSS) software for windows. Chi-square test, odds ratio, and 95 % confidence limit interval were used to find the presence or absence of statistical association between certain proposed risk factors and high BLL. Stepwise logistic regression analysis was also used aiming to identify risk factors (independent variables) that may predict development of high BLL (dependent variables) among the study sample. Student t- test was performed to indicate the presence of a significant difference between the mean values of the two subsets of study population (BLL ≥ 10 µg/dl and < ≥ 10 µg/dl) [13].

Results

Table (1) depicts the socio-demographic characteristics of study population by BLL in µg/dl. Out of 306 women in the childbearing age examined 24 (8.5%) had BLL of ≥ 10 µg/dl. Overall the mean BLL (± SD) was 5.26± 3.33 µg/dl with a range of (1.5- 32.5) µg/dl.

The mean BLL for the high-risk group (i.e. those had BLL ≥ 10µg/dl) was 14.90± 4.72 µg/dl while that of the low risk group (i.e. those who had BLL < 10µg/dl) was (4.44± 1.27) µg/dl with a highly significant difference (p= 0.000).

Although the high-risk women seemed to be younger than the low-risk group, however, no significant difference is reported between the mean ages of the two groups. No significant association is found between any of the variables shown in the table and BLL, except frequent use of kohl.

Almost two thirds of women (70.8%) who had BLL ≥ 10µg/dl reported frequent use of this cosmetic material. Those women were 2 times more prone to develop BLL ≥10µg/dl (OR= 2.46, p= 0.05, 95% CI= 1.02- 5.96).

Table (2) compares distribution of potential risk housing

characteristics between study women: those with BLL ≥ 10µg/dl and those with BLL < 10µg/dl. A highly significant association is found between all housing characteristics that carried potential risk and BLL with a (p-value) varied from (0.028- 0.000). Old buildings showed an operational risk for the development of BLL ≥ 10µg/dl (OR= 13.56, p= 0.000, 95% CI= 5.05- 36.4) which is the highest risk. Peeling and chipping of paint carried a highly significant risk (OR= 9.59, p =0.000, 95% CI= 3.40- 27.03) too.

Location of the household near to an electricity generator increased the risk in a highly significant way (OR= 5.19, p= 0.004, 95% CI= 1.71- 15.75). To a lesser extent but still significant was the location near a fuel station (OR= 6.46, p=0.028, 95% CI=1.77- 23.59) and near a major road (OR= 5.33, p= 0.006, 95% CI= 1.63- 17.46). Having more than one of the above-mentioned characteristics related to the household location also carried a highly significant risk (OR= 5.60, p= 0.002, 95% CI= 1.86- 16.90).

Table (3) presents a stepwise logistic regression model for the predictors of high BLL among the study sample. Elevated BLL was associated with location of the household (p= 0.002, Exp (B) = 6.820), age of the household (p= 0.004; Exp (B) = 6.791), and presence of peeling and chipping paint (p= 0.006, Exp (B) = 6.253).

The characteristics of the women with the highest BLL, two women were identified; one with a BLL of 32.5 µg/dl, who was almost 48 years old, while the other was 35 years old with a BLL of 29.2 µg/dl. The only risk factors consistently identified for the two women were living in an old house (> 20 years of age) and having heavy chipping and peeling paints. One of the households was near a big electricity generator and the other was near a main road.

Discussion

Mosul is a densely populated city. It is the second largest city in Iraq situated 400 km north of Baghdad, the capital. Mosul as with other cities in Iraq, is facing several environmental health problems with an increased burden from environmental lead pollution. This pollution may come from various sources such as old cars, electricity generators, which are widely distributed in the city, and the presence of a large number of old houses. This can be translated into increased BLL in the general population [14].

Poor pregnancy outcomes like intrauterine growth retardation, prematurity and high maternal mortality, are common in this part of the world [15]. It is worth noting that female in the childbearing age form about (20%) of the population in Mosul city. So it is important to determine the BLL among this sector, where the prevention of adverse effects of high BLL, namely fetal lead encephalopathy, requires that BLL(s) of prospective mothers be kept below 10µg/dl not only during pregnancy but also in the years preceeding conception [16].

The sample of the present study was selected from non-pregnant mothers (age 15-49 years) who attended Al- Hadbaa primary health care training center for vaccination of any of her children. This center has a wide catchment area mostly of moderate and low socio-economic status. These women are more likely to have high BLL because of increased environmental and occupational lead exposure, where almost 40% are living in old houses with peeling and chipping paint (46.2%), while just more than 40% of the husbands are employed in lead trades.

The present study revealed that the point prevalence of BLL ≥ 10µg/dl was (8.5%) among the examined women. Blood lead level in Iraq is not routinely measured in any health facility, therefore; there are limited data about the prevalence of high BLL either in the general population or in the disadvantaged groups like women in childbearing age and children under five years of age. A number of studies with almost a small sample size have reported occupational exposure in the country [10- 12].

The mean BLL reported in this study was 5.26± 3.33 µg/dl with a range of (1.5- 32.5 µg/dl), which is very much lower than that reported in the Al-Nori study carried out in 2002 (27.54± 5.87 µg/dl) [10]. The mean BLL reported by the Al-Nori study was for 100 healthy male subjects with minimal or no risk of exposure to a polluted atmosphere. This discrepancy could be explained by three hypotheses: (1) BLL is a reflection of the lead that gets accumulated in the bone after about 30 days [17-18]. (2) The sample of the current study covered females of childbearing age while the sample of Al-Nori [14] study includes males. In our community females have lower environmental exposure since they have lower mobility outside the home. (3) Al- Nori [14] in his work used atomic absorption spectrophotometry which is probably more sensitive than the method used in the present study. Hence, a further study is recommended to compare the validity of Lead Care Blood Testing System versus atomic absorption spectrophotometry particularly when they are used in survey studies.

A screening for BLL(s) was carried out in Basrah which is also a large city with high population density situated about 500 km south of Baghdad. A higher mean BLL was reported by this study (11.26± 3.46) µg/dl, which covered all age groups of both genders and it was (10.10± 2.96) µg/dl for females. This difference is probably due to a different sample size (n= 602 individuals) which were randomly selected from people attending 17 PHCC(s) with a wide age range (9- 79 years) [17].

Some sporadic studies in Pakistan have indicated that the BLL(s) in the general population were much above safety levels (i.e. 10 µg/dl) recommended by the center for Disease Control and Prevention (CDC). Mean BLL(s) were reported to be 18.8 µg/dl in children in Rawalpindi [18] and 34.4, 31.8, 29.9 and 38.2 µg/dl in males, females, soldiers, and children respectively from Karachi [19].

Much lower figures were reported in the USA findings of the National Health and Nutrition Examination Surveys (NHANES). This survey indicated that BLL(s) continued to decrease in all age groups and racial/ethnic populations. During 1999-2002, the overall prevalence of elevated BLL(s) was 0.7% and it was 0.3% for females aged 20-59 years of all racial/ethnic groups, however, it is higher among the black, non- Hispanic (0.5%), a decrease of 68% from 2.2 in the 1991-1994 survey. This survey also showed that the geometric mean BLL(s) declined significantly (p= 0.05) from the 1991-1994 survey period in all populations and subpopulations. Among females aged 20-59 it was 1.7 µg/dl in the survey of 1991-1995 to be 1.2 µg/dl in that of 1999-2002, a higher figure was reported among the black non-Hispanics (1.4 µg/dl) [20].

The findings in this report indicate that BLL (s) continue to decline in the USA and may be in all of the similar highly developed countries. This decline in BLL(s) has resulted from coordinated intensive efforts at the national, state and local levels beginning with efforts to remove lead from gasoline, food cans and residential paint products [20].

Although there is much concern about risk factors of high BLL(s) in Mosul, there is no study conducted to determine the presence or absence of association of certain well documented factors and high BLL in the general population and certain disadvantaged groups namely women in the childbearing age and children under five years of age.

Unlike many environmental health problems, lead contamination is often found at home, in paint, house dust, drinking water and soil. Worldwide, six categories of products account for most cases of lead exposure: gasoline additives, food can soldering, lead-based paints, ceramic glazes, drinking water systems and folk remedies [21].

The results of this study showed that maternal age and job, husband job, and smoking carried no risk association for high BLL(s). On the other hand frequent use of kohl as a cosmetic on eyes carried a significant risk (OR= 2.46, p= 0.05). Unfortunately the stepwise logistic regression model used in this study did not reinforce this risk significance. Kohl or surma is a topical agent applied around the eyes and is used in Asian and Arabic countries; they are available as a fine powder or heavy crystals of lead sulfide [21]. An analytical study found that the concentration of lead of different types of this substance available in Pakistan ranged from 0.03% to 81.37 % [22]. Given that more than half (58.2%) of the mothers in the present study were exposed to this hazardous substance, it is believed that educating mothers about the potential hazards of kohl could discourage application to their eyes.

There is a wide agreement on the importance of old buildings and presence of peeling and chipping paint as a risk factor for high BLL. This is clearly shown in the present study, where women living in old houses with chipping paint are at a great risk for the development of high BLL (p= 0.000) in both instances. Romien in Mexico City mentioned that lead-based paint and pigments that contain lead chromate are frequently used in this city. The proportion of lead can reach 50% for exterior lead-based paint. Although this product is not water soluble, it is soluble in acid liquids, and therefore lead may be released into the environment (dust and water) [23]. Also, the dissociation of lead chromates by gastric acid can be responsible for the bioavailability of the lead contained in the ingested dust or soil contaminated by leaded paint [24]. Workers and home-owners involved in the rehabilitation of old buildings are at risk of lead poisoning and for bringing lead-containing dust home to their families [21].

In the present study the risk significance of these two household characteristics is further strengthened by using stepwise logistic regression model of analysis with a significance value of 0.004 and 0.006 for age of the household and presence of peeling and chipping paint, respectively. The present work showed that location of the household near a major road, electricity generators, fuel station either alone or a combination of two or all of these characteristics carried a significant risk showed by OR and p-value. This association is furthermore approved by the stepwise logistic regression model with a (p value) of 0.002.

In Iraq, the number of automobiles increases yearly where the majority of these cars are second hand. Thus the increasing number of cars and rising gasoline consumption resulted in a wide dissemination of lead in the environment, in addition to the large number of electrical generators that are haphazardly distributed all over the city. Besides gasoline and diesel fuel used by cars, electricity generators and buses is imported from different sources and most probably they are leaded ones.

No data are available estimating the amount of gasoline and diesel fuel consumed every day in Mosul city and the annual amount of deposited lead in the environment from combustion of leaded gasoline and other sources of airborne lead in Mosul city which are battery repair shops, local paint factories and lead smelters. Inhalation or ingestion of dust and soil contaminated with lead can play an important role in the total lead body burden in children [23]. Similar conclusion may be applied on females in childbearing age.

Methodological Issues

There are certain limitations to this study that merit discussion. This study is a cross sectional design. Habits and exposure may differ by season and socio-economic status especially among females of childbearing age affecting BLL(s). The study sample size did not provide enough statistical power to identify factors associated with elevated BLL(s), which is the result of our limited funds and due to the difficult security situations. Also the present study did not probe deeply the habits and customs related to lead exposure.

The BLL(s) observed in the population of the present study indicate that lead exposure is an important public health problem in Mosul city. The major predictors of high BLL were the location of the household in relation to traffic density and home exposure i.e. age of the household and presence of chipping paint.

Preventive strategies must be conducted to provide a lead-free environment in the city. These strategies should be based mainly on either decreasing the percentage of lead content in leaded gasoline or completely prohibiting its use since it is the primary source of lead pollution in the environment. The population of Mosul is largely unaware of the hazards and health consequences of lead exposure, and they therefore lack prevention strategies. Prenatal screening for lead exposure may include a five-item questionnaire and management focused on removal of the lead source. Further research is badly needed to evaluate the BLL(s) among other disadvantaged groups i.e. children under five, and its contributory factors.

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Table 1: . Socio- demographic characteristics of study population by BLL.

Characteristics	BLL (µg/dl)		OR	p- value	95% CI for OR
	≥ 10 (n= 24)	< 10 (n= 282)			
Age (Years)					
≤ 19	5(20.8)	60(21.3)	0.97	N.S	0.33- 2.88
20- 39	18(75.0)	188(66.7)	1.50	N.S	0.58- 3.88
40- 49	1(4.2)	34(12.1)	0.32	N.S	0.05- 2.17
Mean± SD	24.13± 5.97	26.40± 8.34			
Maternal Job					
Housewife	21(87.5)	254(90.1)	0.77	N.S	0.21- 2.76
Worker	3(12.5)	28(9.9)			
Husband Job					
Civil servant and or gainer	7(29.2)	106(37.6)			
Manual worker	5(20.8)	64(22.7)	1.18	N.S	0.37- 3.80
Driver	5(20.8)	50(17.7)	1.51	N.S	0.46- 4.92
Others	7(29.2)	62(22.0)	1.71	N.S	0.58- 5.06
Smoking Exposure					
Yes	11(45.8)	101(42.8)	1.13	N.S	0.49- 2.61
No	13(54.2)	135(57.2)			
Frequent use of kohl					
Yes	17(70.8)	140(49.6)	2.46	0.05	1.02- 5.96
No	7(29.2)	142(50.4)			
Mean BLL	14.90± 4.72	4.44± 1.27		0.000	

Table 2: Housing characteristics of study population by BLL.

Characteristics		BLL (µg/dl) ≥ 10 (n= 24)	BLL (µg/dl) < 10 (n= 282)	OR	p- Value	95% CI for OR
History of House Building						
Before 1978		21(87.5)	96(34.0)	13.56	0.000	5.05- 36.41
After 1978		3(12.5)	186(66.0)			
Peeling & Chipping Paint						
Yes		21(87.5)	119(42.4)	9.59	0.000	3.40- 27.03
No		3(12.5)	163(57.8)			
Location						
Near Major Road Only	**Yes**	4(36.4)	21(9.67)	5.33	0.006	1.63- 17.46
	None of the risk factors	7(63.6)	196(90.33)			
Near Electricity Generator Only	**Yes**	5(41.7)	27(12.11)	5.19	0.004	1.71-15.75
	None of the risk factors	7(58.3)	196(87.89)			
Near Fuel Station Only	**Yes**	3(30.0)	13(6.22)	6.46	0.028	1.77- 23.59
	None of the risk factors	7(70.0)	196(93.78)			
More than one factor related to location	**Yes**	5(41.7)	25(11.31)	5.60	0.002	1.86- 16.90
	None of the risk factors	7(58.3)	196(88.69)			
Overall risk						
Yes		17(70.8)	86(30.5)	5.53	0.000	2.40- 12.75
No		7(29.2)	196(69.5)			

Table 3: Stepwise logistic regression model for the development of high BLL among study sample.

Parameter	B	SE(B)	Significance	Exp(B)	95% CI for Exp (B)
Location of Household	1.918	0.593	0.002	6.820	1.084- 25.577
Age of Household	1.916	0.658	0.004	6.791	1.869- 24.680
Peeling & Chipping Paint	1.633	0.668	0.006	6.253	1.689- 23.150
Constant	0.447	1.239	0.718	0.640	

Patient Expectation vs Satisfaction: A Study from Bangladesh

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Abstract

Methods: This study was carried out in 3 specialist practice chambers at 3 different locations of Dhaka. A total of 300 patients were included. A cross-sectional survey about expectations and satisfaction of patients was carried out using a questionnaire specifically designed for the study. Informed, written consent was obtained from every patient participating.

Findings: Patients were between 9-76 years of age. 37% were women and remainder 63% men. They were mostly married (59%). The majority (43%) had higher secondary education. Patients were mostly in service (47%). The majority of females (53.15%) were housewives. Average waiting time for patients was 15 minutes against an expected waiting time of 10 minutes. Patients preferred to watch television, read newspapers and/or magazines or listen to music while waiting for consultation. Average consultation time was 10 minutes against patient expectation of 30 minutes. The majority were satisfied with the patience of consulting physician (71.33%); patients did not comment about referrals. The patients had reservation about the presence of the chamber aid (56.67%) or other persons (89%), other than their own attendants, for reasons such as lack of confidentiality (76.03%) and discomfort (23.97%). 47% had an objection about receiving phone calls by the physician during consultation, because this interfered with the consultation. The expected average consultation fee was Bangladesh taka 100 (US$ 1.45) against an average consultation fee of Bangladesh taka 233 (US$ 3.20). 60% of patients were satisfied with their value for money.

Conclusions: The study reveals useful information that will help physicians in Bangladesh as well as in the region, to be more patient friendly.

Introduction

Satisfaction of patients is a very important part of any clinical practice. Although the primary goal is to ensure proper management; delivery of care in a manner that is satisfactory to patients is also very, if not equally, important in the current perspective (Edwards & Staniszewska, 2000; McDonald & Langford, 2000). Patient satisfaction is directly proportionate to the service delivered and any decline in the quality of service ultimately leads to dissatisfaction of the patients (McKinley & Roberts, 2002; Jackson & Kroenke, 2001). Studies have shown that physicians who are more focused on their patients benefit them more (Kiyohara et. al., 2001).

It is imperative that patient satisfaction surveys be carried out in the community or in a given facility, as successful implementation of the outcome of such studies ensures better patient satisfaction. Results of studies conducted elsewhere cannot be used as reference in another place, as socio-cultural background of patients is important in determining patient satisfaction (Xakellis & Bennett, 2001). The present study is the first of its kind conducted in Dhaka city and also in Bangladesh.

Methods

A cross sectional survey of 300 patients was carried out between May 2006 to June 2006 at three specialist practice chambers in three different areas of Dhaka city. In case of every chamber, the first one hundred consecutive patients who gave written consent to participate in the study were included. A special questionnaire was developed, to be used in the survey.

Results

In all, 300 patients were included in the study. Patients were between 9 to 76 years of age. Of them 63% (189/300) were men and the rest 37% (111/300) women. Patients were mostly married [59% (177/300)] with higher secondary level of education [43% (129/300)]. Most patients were in service [47% (141/300)]. Females were mostly housewives [53.15% (59/111)] (Table 1).

Average waiting time for the patients was 15 minutes, against an expected waiting time of 10 minutes. 30% (90/300) patients were consulted within 10 minutes.

Patients preferred to watch television [71.33% (214/300)], read newspapers/magazines [25.33% (76/300)] or listen to music [3.33% (10/300)] while waiting to consult the physician (Table 2).

Patients had reservations about the presence of the chamber aid [56.67% (170/300)] and other persons [89% (267/300)] for reasons like lack of confidentiality 76.03% (203/267) and discomfort 23.97% (64/267). 47% (141/300) of patients also had an objection to receiving phone calls by the physician because of interference with the consultation process (Table 3).

Average consultation time was 10 minutes against patient expectation of 30 minutes. 22.33% (67/300) patients were consulted for a minimum 30 minutes or more.

The majority of patients were satisfied with the patience of the consulting physician [55.67% (167/300)], explanation by physician [59.33% (178/300)] and investigations advised [53.67% (161/300)], while 53.33% (160/300) patients had no comment about referral to other physicians (Table 4).

The expected average consultation fee was Bangladesh taka 100 (US$ 1.45) against an average consultation fee of Bangladesh taka 233 (US$ 3.20). 60% (180/300) of patients were satisfied with the service they received for their money (Table 5).

Discussion

In today's clinical practice patients are partners in health care (Edwards & Staniszewska, 2000), and the reason why their expectations and satisfaction is considered crucial in ensuring delivery of quality health care.

It has been shown that socio-academic-economic background influences the level of patient satisfaction (Al-Doghaither & Saeed, 2000). Since the present study was conducted in Dhaka city and as the patients who participated in the study enjoy better socio-academic-economic status compared to the average population of the country, it is expected that their level of expectation would be higher.

Waiting time is very important in determining patient satisfaction. It may consume a major portion of any visit to a consultation chamber. Some studies have reported waiting times as long as 80.5 minutes (Xakellis & Bennett, 2001). Ideally there should be no waiting time in an ideal clinical practice set up. However for practical consideration it cannot be maintained in most cases, especially in a developing country like ours. It is established that hiring of a non-medical aid would help reduce patient waiting time (Grouse & Bishop, 2001). As is also seen in the current study, patients appreciate measures like availability of television, newspapers/magazines, music etc. in the waiting area to lessen their burden while waiting to consult physicians.

Contrary to this, patients appreciate long consultation sessions with physicians and this is one of the important factors determining patient satisfaction. There are reports of long consultation sessions of 24.66 and 27 minutes in the published literature (Kiyohara et. al., 2001; Xakellis & Bennett, 2001).

In our case however, average duration of consultations was 10 minutes as opposed to 30 minutes expected by the patients.

It has been shown that effective communication between patient and physician improves patient satisfaction (Al-Doghaither et. al., 2000). It is also seen in the present work that patients expect patience and explanation about advised investigations, diagnosis, treatment and referral from their consulting physician. Sharing of such information between physician and patient will enhance patient satisfaction level.

Another important issue for patient satisfaction is privacy and confidentiality during consultation. As the present study was not conducted in any academic institute, under/post-graduate students were not present in the consultation chambers. However patients expressed reservation to the presence of any third person, including chamber aid, other than his/her attendant for reasons such as lack of confidentiality and discomfort. Patients also had reservation to receiving phone calls by the physicians during consultation as it interfered with the consultation process.

Cost of consultation is another major issue determining satisfaction of the patients. Although in the present work, the consultation fee was much higher than expected, the majority were ultimately satisfied with their value for money.

Conclusions

The study identifies a number of areas which are important for patient satisfaction and in other words for ensuring delivery of quality care.

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Table 1: Background data of study population

Parameter	Number
Sex	Male: 189 Female: 111
Age in years	9-76
Marital status	Single: 76 Married: 177 Others: 47
Educational status	No formal education: 22 Primary: 37 Secondary: 24 Higher secondary: 129 Graduate: 69 Post-graduate: 19
Occupational status	Private service: 93 Government service: 48 Business: 33 Housewife: 59 Student: 35 Unemployed: 32

Table 2: Preferred means of relaxation while waiting to see consultant

Preferred Modality	Number
Watching television	214
Reading newspaper/magazine	76
Listening to music	10

Table 3: Reservations of patients

	Yes	No	No comment
Presence of attendant	0	300	0
Presence of chamber aid	170	41	89
Presence of other persons	267	15	18
Reason for reservation			
Lack of confidentiality	203		
Discomfort	64		
	Yes	**No**	**No comment**
Reception of phone calls by consultant	141	83	76

Table 4: Fulfillment of patient expectation

Parameter	Satisfied	Not satisfied	No comment
Patience of physician	167	78	58
Explanation by physician	178	109	13
Investigations advised	161	91	66
Referral to other physician	87	53	160

Table 5: Patient satisfaction in terms of value for money

Number of patients	Satisfied	Not satisfied	No comment
300	180	95	25

Prevalence of Allergic Rhinitis and it's Risk Factors Among An-Najah University Students - Nablus, Pakistan

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Key Words: allergic rhinitis, prevalence, Palestine

Abstract

Background: Inhalant allergic conditions such as seasonal and perennial allergic rhinitis are becoming quite common. The effect of allergy on an individual's quality of life and the extent to which it may restrict daily activities is often overlooked.

Controlling allergies can significantly decrease health care cost. The purpose of this study is to estimate the prevalence of allergic rhinitis among young adults in Palestine represented by An- Najah University students.

Methods: The study sample consisted of around 1000 (52% females, & 48% males) randomly selected students from all colleges of the University. Data were collected through structured interview including questionnaire filling. All data were analysed using SPSS program applying Chi-square test, with 95 % level of significant (P value = 0.05).

Results: Allergic rhinitis prevalence rate was 3.1 and the percentage of patients who reported to have allergic rhinitis was 38.1%; there was no statistically significant association between allergic rhinitis and gender, smoking, place of living, and other housing conditions. On the other hand the relationship between allergic rhinitis and weight loss, deep sleeping, chronic respiratory infections, nasal polyps, anxiety, and sleep apnoea was a statistically significant relationship (p value < 0.05). The triggers that have a large effect on the health of the population sample for allergic rhinitis were respiratory infections, tyre burning and war gases, house dust, strong odours, auto exhaust, smoke and weather changes (49.7%, 49 .1 %, 46.7%, 40.6 %, 33.9%, 33.8%, 34.2%), respectively.

Conclusion: Results show relatively lower allergic rhinitis prevalence in Palestine compared to some neighbouring countries, but were consistent with studies done in Turkey. The results confirmed the strong relationship of Allergic Rhinitis and respiratory infections and Asthma.

Introduction

With the explicit stretching of health services in Jordan provided by different health provisions, one expects an escalated risk of drug poisoning due to increased availability (1), A rich medical literature surrounding this issue is found.

Poisoning per se is considered to be a common medical emergency in childhood particularly in the preschool age group worldwide (2); the severity and frequency of poisoning is reduced by different preventive measures, however, we still need more effective and safer means of prevention as well as treatment (3).

Given the lack of poisoning incidents registry in this hospital, the author retrospectively collected and reviewed all medical records of children who were diagnosed and admitted as cases of drug poisoning to princess Haya military hospital in Aqaba - a city south of Jordan, with a population of around 200,000 - during the period from February 2004 to February 2006. All cases were admitted to the pediatric ward or intensive care unit.

Age, sex, type of drug ingested, and history of the circumstances that lead to poisoning were recorded. Toxicological screenings of blood or urine were not executed. The study excluded cases of poisoning caused by all other substances. Munchausen's by proxy syndrome and subjects above 14 years of age were also excluded (hospital policy regards pediatric age group as up to 14 year of age).

Methodology

Nablus district is located in the northern part of the West bank. It is bounded by Jenin from the north; Tulkarm from the west; Ramallah and Jericho from the south and the Jordan river from the east 10.The geographical position of Nablus district in the northern part of west bank gives it a comparatively low temperature range. Located in Nablus, An-Najah National University is currently the largest University in the West Bank, with 16 colleges and around 13,000 enrolled students (11).

Population of the Study

The study population was chosen from An-Najah university in Nablus. The study sample consisted of a total 1000 randomly selected students from all colleges of the University whether scientific, humanitarian, or community college. The percentage of students in the sample was representing the percentage of students in each college. The age of the students was at range of (18-27). Both males and females were included in almost equal percentages.

Data Collection

Data were collected during the period of the first of September 2004 to the end of December 2004, using a structured interview. A questionnaire was designed, evaluated, and reviewed by an expert statistician. A pilot test was carried out on 30 students to find the capacity of students to understand the questionnaire wording, then the questionnaire layout was modified accordingly. A total of 1116 questionnaire forms were distributed; the total response rate in this study was 90 %; (1007) Questionnaires were returned.

Questionnaire Component

The questionnaire sheed light on several aspects that play an important role in triggering allergy. The following are important components of the questionnaire:

Sociodemographic factors including age, sex, college, weight, sport, and smoking.

Environmental history including residence, trees, allergens, inside the home,

type of cooling, type of heating, indoor animal and type of pillow.

Triggers that cause or worsen the subject's symptoms including exercise, respiratory infections, weather changes, foods. The symptoms included nasal, sinus, eyes, chest, eczema, asthma and allergy problem (frequency and severity), and health problems other than asthma and allergy.

Data Analysis

All data of questionnaire for 1007students sample were entered into the computer and computed using SPSS program and applying Chi - square test, with a 95 % level of significance (P value = 0.05).

Analysis of Descriptive Studies

Tables containing descriptive studies were obtained, such as sex, age, residence, environmental, social and living factors.

Analysis of Relationship

Relationship between risk factors, triggers, and some disease with allergic rhinitis among An-Najah University students was obtained, also relationship between sex, age, residence, smoking, sport practicing and allergic rhinitis was obtained.

Results

Table 1 describes the demographic and anthropometric characteristics of The study sample. Males and females were almost equal. Most of the study sample were single (94.9%), not working (93.6%), and non smokers (81.1%).

Table (2) describes the place of living, whether it is dormitory or own house, also describes some environmental factors of the place of residence. More than half the sample live in the city, and about half live in the university dormitory. 60% live in relatively new houses, which were either stone buildings or brick buildings. Using a fan was the major cooling method, with only 1.3% using air conditioning.

Table 3 shows the prevalence rate of allergic rhinitis in this study and the distribution of allergic rhinitis according to gender and place of residence.Prevalence rate of allergic rhinitis was calculated as follows:

P = Number of people with the disease or condition at a specific time (×10) n

Number of people in the population at risk at the specified time*

*The number of An-Najah University students in the year 2004 was 12,500 students.

Table 4 shows the percentage of triggers in relation to allergic rhinitis in our study sample. The triggers that have a large effect on health of the population sample for rhinitis were respiratory infections (49.7%), tyre burning and war gases 49.1%, house dust 46.7%, strong odours 40.6%, auto exhaust 33.9%, smoke 33.8%, weather changes 34.2%, grass and trees 20.9%, and cosmetics 20.1%. All other triggers appear to have less effect.

Table 5 shows that there was a statistically significant relationship (p value < 0.05) between allergic rhinitis and weight loss, deep sleeping, chronic respiratory infections, chronic abdominal pain, nasal polyps, anxiety, sleep apnoea, chronic diarrh0ea, migraines and anaemia. However there was no statistically significant relationship (p value > 0.05) between allergic rhinitis and gender, smoking, smoker at home, living place, the tree and grass around the house, kind of building, kind of heating source, kind of cooling source, kind of animals in house, kind of animal around the house, kind of pillow, practice of sports, heart problems, diabetes, thyroid disorder, skin allergy, and glaucoma.

Discussion

Table 1 gives a comprehensive demographic and anthropometric description of the study sample .Our study sample, represents the typical profile of university students in Palestine, where we have a fair mix of males and females, most of the males were single and around 20 years of age. All colleges of the university were well represented in this study sample.

Exposure to smoking whether directly and indirectly affects more than half of the sample study, and about half of this sample practices sports. When the target population were distributed according to their residence, 46.1% of the target population were living in dormitories, which can be explained by the political situation after AL Aqsa Intifada in which closure and checkpoints make transportation between Palestinian cities very difficult. In regards to house conditions, the results show that the majority of students live in relatively new stone buildings with quiet lay

out in the city. Although the percentage of asbestos buildings was low, it indicates an important need for raising awareness among students about asbestos and its hazardous effects on the lungs.

The triggers that have a large effect on the health of population study sample for allergic rhinitis were respiratory infections, tyre burning and war gases, house dust, strong odours, auto exhaust, smoke and weather changes (Table 4)These results indicate that war gases and tyre burning play an important role in worsening allergic rhinitis symptoms which points the effect of political conflict and the use of war gases and tyre burning on the health of Palestinian society.

Further more our results indicate that triggers in this study are mainly non allergic in nature. Previous studies show that, AR triggers can be allergic or non allergic in nature 12, the allergic triggers are house dust mite, pollen, animals, such as dogs and cats, fungal spores and cockroach, particles; the non-allergic triggers include smoke and pollution from cooking fuels, wood smoke, smog, viral respiratory tract infections and weather changes. All the above triggers are found in urban, camp and rural environmental albeit to different extents12.

Our results show a statistically significant relationship between allergic rhinitis and weight loss, deep sleeping, chronic respiratory infections, chronic abdominal pain, nasal polyps, anxiety, sleep apnoea, chronic diarrhoea and migraines at p value < 0.05 (Table 5).

Several studies in other parts of the world have shown similar relationship results 13,14 The gender relationship with allergic rhinitis was not statistically significant in our study (Table 5). A Swedish study also did not find difference between men and women in the general population regarding allergic rhinitis 15 . However a study in Tehran, found a significant relationship between gender and allergic rhinitis 16.The same study in Tehran and another study in Finland 17 also found that environmental and social factors are important risk factors in the incidence of allergic rhinitis 16. On the contrary this relationship in our study was not statistically significant, (Table 5).

This difference in prevalence, triggers and risk factors for allergic rhinitis among different countries has been demonstrated repeatedly in the epidemiological studies. The international study of asthma and allergies in childhood (ISAAC) 18 steering committee, which conducted a study to investigate worldwide prevalence of asthma, allergic rhino conjunctivitis, and atopic eczema was a very obvious example.The multifactorial factors and the presence of several types of allergic rhinitis are possible explanations.

Conclusion

Palestine, as a country in transition, shifting from traditional to a modern society, has several unique features that put the population at risk of developing allergic conditions.This is the first study to determine the prevalence of allergic rhinitis and its risk factors among young adults in Palestine. Our results show relatively lower allergic rhinitis prevalence in Palestine compared to some neighbouring countries, but were consistent with studies done in Turkey.The results also show statistically significant relationship between allergic rhinitis and weight loss, deep sleep, chronic respiratory infections, nasal polyps, anxiety, sleep apnoea, migraines but neither gender nor residence and environmental factors have a statistically significant relationship with allergic rhinitis.

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Table 1. Demographic and Anthropometric characteristics of study sample

Gender	***Frequency***	***Percent%***
Male	448	44.8
Female	511	51.1
Missing system	41	4.1
Total	1000	100
Age	***Frequency***	***Percent %***
17.5-20	546	54.6
20.5-22	333	33.3
22.5-24	66	6.6
More than 24	25	2.5
Missing system	30	3
Total	1000	100
College	***Frequency***	***Percent%***
Scientific	348	34.8
Humanitarian	649	64.9
Missing system	3	0. 3
Total	1000	100
Sport practice	***Frequency***	***Percent%***
Yes	514	51.4
No	428	42.8
Missing system	58	5.8
Total	1000	100
M. Status	***Frequency***	***Percent%***
Married	43	4.3
Single	949	94.9
Missing system	8	0.8
Total	1000	100
Job	***Frequency***	***Percent%***
Employed	18	1.8
Worker	10	1
Not working	936	93.6
Missing system	36	3.6
Total	1000	100
Smoker	***Frequency***	***Percent%***
Yes	176	17.6
No	811	81.1
Missing system	13	1.3
Total	1000	100
Smoker in house	***Frequency***	***Percent%***
Yes	554	55.4
No	366	36.6
Missing system	80	8
Total	1000	100