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From the Editor

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This is the first issue this year and we look forward to serving our readers and authors in better way. The journal has gained a very high academic standard in the region and the world and this cannot be done without the authors' trust in the journal and the tremendous work of the production team. It is a model that is unique to the journal and that fosters close collaboration with authors and works with them to improve their papers. Diabetes Mellitus is quite prevalent in the region and two papers from Saudi Arabia deal with the topic. A national survey looked at distribution of Diabetes Mellitus among the Saudi Adult Population. The authors followed a cross-sectional community, based study covering whole of Kingdom of Saudi Arabia. The WHO STEP wise approach to Surveillance (STEPS) of Non-Communicable Diseases (NCD) risk factors was the basis for conducting the survey and collecting data. A total of 4657 participants were included, 2312 (49.2%) males and 1345 (50.8%) females. It was shown that (15.3%) reported to be known diabetics. The authors concluded that Diabetes Mellitus is prevalent among the Saudi adult population. It is increasing with age, family income, Body Mass Index, and central obesity, also correlated with high lipid profile.

A cross sectional study paper from Iraq attempted to analyze contraceptive use dynamics among married women (15-49 years) attending primary health care centers in Mosul city. Data collection was carried out by using a standardized questionnaire. This study demonstrated the following results: contraceptive prevalence rate was 50.4%, contraceptive failure rate (3.5%), contraceptive switching rate (15.9%) and contraceptive discontinuation rate was 13.4%. The authors concluded that the prevalence of contraceptive use in Mosul city is similar to the national one, and the latter is considered one of the highest rates among Arab countries. What is more, the present study showed that the use of contraception was associated with variable failure, switching and discontinuation.

A paper from Jordan reviewed the baseline for clinical indications of EEG in children and to evaluate the Electroencephalography (EEG) ?ndings in children with various acute, chronic CNS disorders and non epileptic events.

The authors concluded that there are many unnecessary routine EEG recordings in children . Investigation of epilepsy and acute encephalopathies appear to be the most valuable indications for routine pediatric EEG. EEG can help in classification of the seizure, and finding a way to reduce EEG requests is request.

A case report from Brazil looked at Ataxia, oculomotor apraxia and school failure. The authors stressed that Ataxia-telangiectasia (AT) is a complex multisystem disorder characterized by progressive neurological impairment, variable immunodeficiency and oculocutaneous telangiectasia. AT is a member of the chromosomal breakage syndromes and it is caused by a mutation in the ataxia-telangiectasia mutated (ATM) gene. They report a case of a six-year old boy affected bay AT who presented with episodes of falling during exercises and small conjunctivae and skin telangiectasias on physical examination.

A review paper from Kuwait looked at Hyperparathyroidism in Pregnancy. The authors stressed that Hyperparathyroidism during pregnancy is rare, and it carries complications to the mother and fetus. Diagnosis can be very difficult, and it represents a challenge to the treating physician. Most of the time, parathyroidectomy is the treatment of choice.

A descriptive cross sectional study from Iran attempted to identify the main human resources problems through a diagnostic survey at staff departments of Kerman University of medical sciences. The authors looked at various behavioral aspects and noted dissatisfaction with the salary system, performance evaluation and promotion and appointment system are the biggest problems of human resources in Kerman University of Medical Sciences. These problems are not confined to Kerman University of Medical Sciences and in that regard they are structural factors; solving these problems are beyond the authority of executives. So, the Presidential deputy of human capital should provide fundamental changes in public organizations' payment systems and performance evaluation to increase employees' motivation.

Report: Middle East Medical Journals and Middle East Academic Survey 2011-2012

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> Firstly we thank all regional academics and readers who took part in this survey and who contributed survey questions.
>
> The reply/return rate from academics was 73% and participating academics came from a range of universities and medical schools representing Iraq, Egypt, Lebanon, Saudi Arabia, Libya, Iran, Turkey, Pakistan, UAE and Jordan.

Your needs and wishes
Data from the survey returns, and comments, were remarkably consistent and showed clear needs and preferences of readers, practitioners and academics.

On the academic side, the free to air archives of previous issues were used 'often' by all but one respondent, (the highest response of the survey) making this a clear need as a research tool. While these archives can be accessed free on our own websites many respondents (also) wanted them on various databases that were either used or preferred by their national academic bodies.

Database presence
We are currently listed on Ebsco databases (including EbscoHost, DynaMed and Cinahl), and Al Manhal database and we have applied for listings on ISI. We will advise further once we hear. While most of these databases are closed commercial entities we are seeking access to all databases requested by our readers.

All articles are being given a DOI (Digital Object Identifier) as they go on to the Al Manhal database.

In one Middle East country we have submitted the journals to the national academic bodies and have had them meet the national academic criteria, and become accepted, making this another route of journal acceptance for academics publishing their research.

Most readers wanted 'an email reminder of new issues out' and more CME. Both of these will be implemented as from next issue (February 2012) and you can click the following email address to be put onto the email distribution list for the Journal Alerts emails. Contact: admin@mediworld.com.au.

These Alerts will carry journal titles and their authors, for the current issue, with the ability to click directly to the online article.

Readers almost unanimously liked the variety of topics, the relevance of topics and the fact that regional issues were covered. They were also appreciative of the journals as a free resource and most have requested no advertising on the journals. A full report of both surveys can be found further below.

Impact factor / Health Index

These tend to be produced on a publishers' own database (and therefore reflect that company's or databases journals only) or can be worked out via formulae/statistics or via Google search engine.

The accepted formula is:
The impact factor for a journal is calculated based on a three-year period, and can be considered to be the average number of times published papers are cited up to two years after publication. For example, the impact factor 2011 for a journal would be calculated as follows:

A = the number of times articles published in 2009-2010 were cited in indexed journals during 2011

B = the number of articles, reviews, proceedings or notes published in 2009-2010
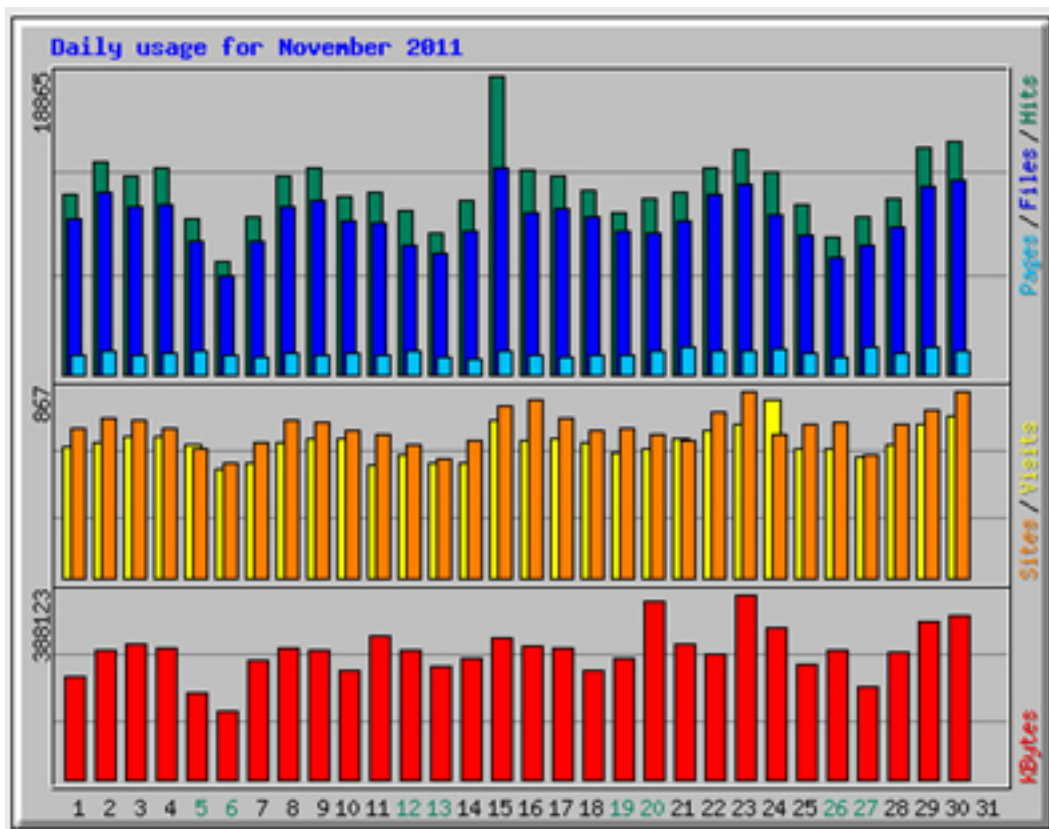
Impact factor 2011 = A/B

You can also use the following formula to find out the number of citations on an (your) individual author's /academic's own articles:

http://code.google.com/p/citations-gadget/

Take a sample 3 year old issue of MEJFM and apply these formulae to it.

Webstats

(Snapshot: MEJFM November 21, 2011)

The other report we will make available to you on a quarterly basis will be sourced from our 'webstats' software which has been running behind the journals since their launch and where we've seen our readership grow until its current level of circa 600,000 month on MEJFM/WFM.

The top (8) MESA/MENA countries reading the journal are: India, Egypt, Pakistan, Jordan, Saudi Arabia, Yemen, Turkey, United Arab Emirates, and Bangladesh.

The top international reader countries are: USA, Australia, United Kingdom, Russian Federation, Indonesia, Malaysia, Canada and South Africa.

Readers from 115 countries regularly access each monthly issue.

Most used search engines are: b3090789.crawl.yahoo.net; crawl-66-249-67-18.googlebot.com; 213.186.122.2.utel.net.ua; imparser12.yandex.ru; msnbot-207-46-199-37.search.msn.com

Most common access points (after a direct request for the website) are for articles on surgical management, antibiotic sensitivity, and CME.

Academic Survey

The reply/return rate from academics was 73% and contributing academics came from a range of universities and medical schools from Iraq, Egypt, Lebanon, Saudi Arabia, Libya, Iran, Turkey, Pakistan and Jordan.

Top three most read journals were: (1) Middle East Journal of Family Medicine/ World Family Medicine (MEJFM/WFM),(2) Middle East Journal of Nursing (ME-JN) and (3) the Middle East Journal of Psychiatry and Alzheimers (ME-JPA). The latter was only launched in 2011 but its early high readership shows a regional need for information on this topic.

Most academic readers (75%) read 'articles of interest' mainly, but 10% read every article. All but one respondent accesses the archives 'often'.

In regard to 'new titles' there was most interest in, in order, a Journal of Public Health, a Journal of Epidemiology and a Journal of Paediatrics. Other journal topics of interest to the region are: Medical Education and Accreditation; Women's health and other issues related to women, Emergency Medicine; Social medicine.

Most academics did not want to see advertising in the journal.

Preferred article types were consistently:
* Original contribution/Clinical investigation
* Review articles
* Education and training
* CME

New topics academic readers would like to see covered include: Medical education research and operational research; Special Education and Evaluation.

Consistently readers like the diversity of the topics, the relevance of the topics and the coverage of regional research.

Negative comments were: many wanted 'theme issues' and some wanted a colour cover/image. While the possibility of 'theme issues' will depend on the quality, number and type of articles submitted - we will in future provide a colour cover, but are conscious that this may add a cost to those organisations who print them out for their members so we would like to hear any negative feedback on this point.

Overall rating for MEJFM was given as 8.6 (out of a scale ranging from 1 poor to 10 excellent)

Comments ticked in agreeance (top 6 in order):

* I would like an email reminder that there is a new issue out.
* I appreciate that it is a free resource for doctors of the region.
* I would like to see more research
* The MEJFM deals in real medicine relevant to the Middle East region
* I am happy with the publication in its current form
* I would like to see theme issues

Most readers or authors would also like a pdf copy of the individual articles, in addition to the full pdf. This will be instituted from February 2012.

Academic Competencies
As some respondents answered nationally and others for their particular medical school we could not make national assumptions from the data collected. The following is a link to a recent article and survey done on this topic which probably provides a more complex overview. See: www.mejfm.com/July2010/globalcompetencies.htm

Research in the Region
Data showed:
Allocation of research budget to academic institutions has been graded as average to poor
Allocation of qualified personnel was graded as average to good
Most students have free access to online medical databases and a variety of databases are used, and there are no limits on which can be used free in most institutions

Most existing research facilities (computer and other) were graded average.

Most have compulsory research activities for students and most have established guidelines.

Most countries have: Subsidised medicine, Spreading/diffusion of medical insurance and Universal access to medical facilities and most found the focus of their medical school as socially accountable.

National situation
There were widespread shortages of both nurses and GPs/family physicians reported across the region and primary care was undertaken in either hospital outpatients (mostly) or a variety of other locations such as government provided health centres, schools, health houses, industry, armed forces and other.

The percentage of health and medical care provided through primary care was reportedly between 39% (Egypt) and 80% (Iraq)

Reader Survey
Winner of our education pack of multimedia resources is: M. Salem

Pack includes: The Art of General Practice (DVD) How to perform and Interpret Spirometry, Renal Disease; Parkinsons and Related Movement Disorders, Office Procedures.

Diagnosis of human resources in staff departments of Kerman University of Medical Sciences using a three-dimension analysis model: 2011

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Abstract

Introduction: Since human resources are the most important element in any organization and success or failure of any organization is dependent on having efficient human resources, all organizations must continually seek ways to develop their own manpower. Awareness of the current human resources situation through the process of diagnosis is the first step in this endeavour.

Objective: This study aims to identify the main human resources problems through a diagnostic survey at staff departments of Kerman University of medical sciences.

Methods: The present descriptive-analytical study was carried out cross sectionally. The research population consisted of all employees working in staff departments of Kerman medical university deputies, of whom 159 participated in this study. Data was collected by a questionnaire. Data analysis was done through SPSS software using Friedman test, Chi-square and T-test.

Results: Behavioral (mean = 2.33) and contextual factors (mean= 3.24) had respectively the highest and the lowest impact on human resources malfunction in Kerman University of medical sciences. Among subsets of behavioral factors, motivation and job satisfaction (mean = 2.27) and customer-orientation (mean= 1.77) had the highest and the lowest impact on human resources malfunction in all three dimensions respectively.

Conclusion: Dissatisfaction with the salary system, performance evaluation and promotion and appointment system are the biggest problems of human resources in Kerman University of Medical Sciences. These problems are not confined to Kerman University of Medical Sciences and in regard to the fact that they are structural factors, solving these problems are beyond the authorities of executives. Therefore, the Presidential deputy of human capital should provide fundamental changes in public organizations payment systems and performance evaluation to increase employees' motivation.

Keywords: Diagnosis of human resources, Staff department of university of Medical Sciences, organizational health

Introduction

Organizational diagnosis is the process of using the concepts and methods of behavioral sciences, to describe the current status of organizations and to identify ways to increase their effectiveness (1). Organizational diagnosing is often considered as the most sensitive stage of an organizational improvement plan. Organizational Improvement begins with a diagnosis stage. If the malfunctions are not recognized correctly and timely, relevant prescriptions are not prescribed for them and the organization will have an early death (2). Therefore, one of the important actions that successful organizations are doing to improve their effectiveness is correctly and timely diagnosis which enable the managers to identify the current problems of their organization and to avoid them becoming acute (3). Recent studies on organizational diagnosis compare the organization with the human body; as the human body passes through health and illness processes, the same is true for organizations (4). Human resources development, as the key to organization development, requires a plan. The plan should be implemented through establishing systems and sub systems of human development. Therefore, prior to developing any system, is the diagnosis process, followed by preparing and implementing systems, just like a patient who should be diagnosed before any intervention (5).

Human resources as the most valuable capital of any country and the most important technological components in the new century (6) are considered as a top priority in many nations' planning (7). Therefore, organizations identifying and satisfying staff's reasonable expectations are successful in motivating them. On the contrary, lack of attention to the expectations of the staff, causes some problems that lead organizations to serious challenges (5). In addition, there is also special emphasis in the Islamic republic of Iran's 20-year vision master plan on the development of human resources to achieve scientific and technological development (6). Experts believe that the organization's development depends on development of human resources. As competition can never copy human resources, competent human resources are considered as a competitive advantage for any organization (5).

Study of English organizations showed that only 17 percent of the employees utilize all their talents and motives in performing their tasks, 63 percent work within a normal and conventional framework and also with the least standards and expectations and 20 percent of the remaining (due to incompatibility of their talent, desire, interests and personality with their job) are not only dissatisfied and concerned but also insist on conveying their dissatisfaction and discontent to their colleagues. It seems in developing countries, especially in Iran, the number of the third group is higher. To increase the number of interested, satisfied and loyal employees, the existing problems of human resources must be identified and eliminated (5).

The purpose of organizational diagnosis is to establish the widely shared understanding of a system and, based on that understanding, to determine whether change is desirable (8). In an organizational diagnosis, consultants, researchers and managers relying on conceptual models and applied research, assess the current status of the organization and find solutions, to confront challenges(1). To this aim, different models are available (e.g. Weisbord seven dimensional model, human resources development model, Harrison diagnosing model and three- dimension analysis model); in these models organizational diagnosis is assessed and evaluated from different aspects (9).

With regard to frequency and variety of the problems and their side effects on all levels of performance, objectives, behaviors and organizational structures, the three-dimension analysis model is the most appropriate model for analyzing and recognizing of organizational malfunctions (10).

Three-dimension analysis Model
All the organizational events can be studied and analyzed through the three-dimension hypothesis. This model consists of three dimensions of structure, context and behavior. The structural dimension of the organization consists of all physical factors and conditions that are in a special arrangement, and underlie the framework, formation and physical body of the organization. So all physical, financial and technical resources which flow in a specific combination in the organization, are considered as the structural dimension of the organization. This dimension constitutes the non living component of the organization (11).

Behavioral and contextual dimensions of the organization are human and human relations form the main systems of the organization. Contextual dimension is the most important and basic dimension and not only helps the other two dimensions to survive and to grow, but also underlies them and the existence and improvement of the organization is dependent on it. Relation of these factors is in a way that none of the organizational outcomes lies outside of their integration i.e. their relationship is complementary and they are considered as a unique entity, with such relationships, and contextual, behavioral and structural factors are necessarily in continuous interaction.

Although in the real world there is no separation among them, we can differentiate them theoretically to study and analyze organizational concepts (12). Objective: We aimed to do an organizational diagnosis based on the three-dimension model.

Materials and Methods

The present descriptive-analytical study was carried out cross sectionally. The study population consisted of employees working at staff departments in all deputies of Kerman University of Medical

Position	Managers (%)	Experts (%)	Supervisor (%)
Deputy	Percentage	percentage	percentage
Health	5.6	83.3	11.1
Treatment	0	87.5	12.5
Research and technology	11.1	72.2	16.7
Educational	0	88.9	11.1
Development and resources management	7.3	85.4	7.3
Food and pharmaceuticals	11.1	83.3	5.6
Students and cultural	0	92.3	7.7

Table 1: Participants percentage according to the organizational level and unit

Sciences including: Educational, Research and Technology, Development and Resources management, Food and pharmaceuticals, Health, Students and Cultural and Treatment Deputy, of whom 200 were sampled. We used a questionnaire for data collection, which consisted of two parts: in the first part demographic questions were asked and the second part included 40 five-point Likert scaled questions to measure three dimensions of human resources malfunctions. Validity of the questionnaire had been confirmed in previous studies (9). We used stratified and randomized sampling method to ensure the representativeness of the sample. Data analysis was performed through SPSS software, using T-test, ANOVAs and Friedman test.

Results

159 employees (69.5% female) participated in the study (response rate=79.5%). 84.2% of the respondents were working as experts, 8.3% were managers and 7.5% were supervisors, 74.8% of the respondents were married and 25.2% were single. Most of the respondents were employees with 1-5 years working experience (31.6%), bachelor degree (56.3%) and were in 30-40 (33.5%) and 41-50 (33.5%) age groups. Employees with 25-30 years working experience (2.5%), doctorate degree (5.7%) had the least frequency.

Discussion

Behavioral (mean= 2.33) and the contextual factors (mean= 3.24) had the highest and the lowest impact on human resources malfunctions in staff departments of Kerman University of medical sciences respectively (Table 2), in the research of Joneidi and Mohabbati (3) as well as in Kamrani research (10); structural and contextual factors had the highest and the lowest impact on human resources problems respectively.

High impact of behavioral factors on human resources malfunctions indicates that in the studied departments, the manager of the organization's performance in creating a friendly and reliable organizational climate among employees, practicing effective leadership, dealing with conflicts perfectly, distributing the rewards and other organizational benefits fairly, providing equal opportunity to improve staff capabilities and ensuring the employees job security, is not satisfactory. Regarding the importance and position of the staff departments in the University of Medical Sciences performance, neglecting these factors could have adverse effects; not only on staff departments, but also on other units of the university.

Although, motivation is believed to improve employee job

satisfaction(13,14), among the subset of behavioral factors, motivation and job satisfaction (mean rank=2.27) had the highest impact on human resources malfunction (Table 2). In a similar study of Joneidijafari and Mohabbati(3) and also Joneidijafari and Beiginia(9) found that motivation and job satisfaction had the highest impact on human resources malfunction and suggested some probable root causes of this problem, e.g. lack of reasonable and appropriate criteria for employee selection, as well as unfair rewards and payments, inadequate distribution of benefits and lack of job satisfaction(9). Since a motivated person is always aware of the fact that a specific goal must be achieved, and continuously directs his/her efforts toward achieving that goal, even in the face of adversity (15), it is necessary for managers to revise their motivational plans.

Managerial factors affected employees' attitudes, job satisfaction, organizational commitment, and motivation to perform well, and these factors, in turn, influenced organizational outcomes and employees' intention to quit (16). It is proven that a high turnover percentage can cost employers a great deal of financial distress (17).

Previous studies suggest some influential factors on employees job satisfaction, e.g. Furnham &

Variables	Mean	Standard deviation	Standard error	Average score	Z	Test result	P value
Organizational structure	2.81	0.80	0.06	3.00	-2.82	significant	0.005
Methods improvement	3.07	0.88	0.07	3.00	+1.08	significant	0.28
Mechanized information system	3.15	0.76	0.06	3.00	+2.59	Not-significant	0.01
Payment system	2.14	0.66	0.05	3.00	-15.94	significant	0.00
Selection and employment	2.45	0.91	0.07	3.00	-7.36	significant	0.00
Job Appointment and Promotion	2.3	0.78	0.06	3.00	-10.96	significant	0.00
Performance evaluation	2.34	0.96	0.07	3.00	-8.5	significant	0.00
Structural factors	**2.62**	**0.56**	**0.04**	**3.00**	**-7.99**	**significant**	**0.00**
Organizational culture	2.47	0.75	0.06	3.00	-8.6	significant	0.00
Motivation and job satisfaction	1.98	0.75	0.06	3.00	-16.74	significant	0.00
Leadership	2.72	0.98	0.07	3.00	-3.48	significant	0.001
Employee training and Excellence	2.62	0.81	0.06	3.00	-5.7	significant	0.00
Job security	2.06	0.86	0.06	3.00	-5.13	significant	0.00
Behavioral factors	**2.33**	**0.6**	**0.05**	**3.00**	**-13.05**	**significant**	**0.00**
Customer-orientation	3.59	0.81	0.06	3.00	9.12	significant	0.00
Consultants and contractors	2.90	0.72	0.05	3.00	-1.58	Not-significant	0.11
Contextual factors	**3.24**	**0.64**	**0.05**	**3.00**	**4.7**	**significant**	**0.00**

Table 2: Z-test result for structural, behavioral and contextual factors

- -

(See page 10 for Table 3: Friedman test results for the three dimensions)

Dimension	χ^2	Mean ranks	Test result
Structural	259.221	1.85	**Significant**
Behavioral	103.29	1.32	**Significant**
Contextual	56.008	2.83	**Significant**
Sum	**144.68**		

Table 4: Test results

	Variables	Mean ranks	Mean	Standard error
Structural factors	Organizational structure	4.73	2.86	0.79
	Methods improvement	5.29	3.11	0.86
	Mechanized information system	5.47	3.19	0.76
	Payment systems	2.63	2.15	0.68
	Selection and employment	3.48	2.47	0.91
	Job appointment and promotion	3.09	2.34	0.78
	Performance evaluation	3.31	2.39	0.96
	Chi square=259.221			
Behavioral factors	Organizational culture	3.24	2.47	0.74
	Motivation and job satisfaction	2.27	2.01	0.75
	Leadership	3.49	2.73	0.98
	Employee training and excellence	3.64	2.63	0.81
	Job security	2.36	2.09	0.86
	Organizational culture	3.24	2.47	0.74
	Chi square=103.29			
Contextual factors	Customer-orientation	1.77	3.58	0.81
	Consultants and contractors	1.23	2.9	0.73
	Chi square=56.008			

Table 3: Friedman test results for the three dimensions

Gunter (1993); Neil & Snizek (1987) in Cheung; and Scherling have shown that task, status, monetary reward, and social relationships are four essential factors of job satisfaction(15).

Employees viewed job security as another issue in the studied departments although, job security is a topic where the balance of benefits and costs are still relatively unknown. For example, employees with high job security may invest more in their companies out of loyalty or because they view their jobs as long term commitments. On the other hand, workers may take advantage of their job security and do as little work as possible. Job security can also be costly to the firm since dismissal of employees requires more time, effort, and compensation (18).

On the other hand, this research indicated that the performance of the departments in attracting customer satisfaction, paying attention to the complaints, and having established relations with clients, consultants and contractors, were ways that lead to the lowest malfunction in human resources. It might result from the fact that the customers are mainly students, faculty members and employees from different departments and due to the presence of fixed clients over the years, the University has got used to an appropriate framework in its mutual relations. Among the subset of contextual factors, customer-orientation (mean rank=1.77) had the lowest impact on human resources malfunction (Table 3). Joneidijafari and Beiginia (9) showed that customer-orientation had the lowest impact on human resources malfunction. A similar finding was also observed in Joneidijafari and Mohabbati's research (3). It should be noted that customer-orientation had the lowest impact on human resources malfunction in all three dimensions. Considering that customer-orientation is one of the features of successful organizations (19), this finding can be considered as one of the strengths of Kerman University of Medical Sciences. However, behavioral and contextual factors have respectively the highest and the lowest impact on human resources malfunction. This study also showed that structural factors (mean=2.62) played a significant role in developing human resources malfunction (Table 2). Previous studies (3 &10) reported structural factors as the most significant human resources malfunction.

Assessment of structural factors indicated that regulations, programs, decision making and hiring procedures, were evaluated lower than average from the employees' viewpoint. Among the structural factors, payment system (mean rank=2.63), appointments and job promotion (mean rank=3.09), performance evaluation (mean rank=3.31) and selection and recruitment (mean rank=3.48) had the highest impact on human resource malfunction (Table 3).

Payment system and salary and payroll management is one of the most important aspects of human resource management, because on one hand, it has the greatest impact on attracting, satisfying and motivating employees and on the other hand, salary and benefits payment is one of the most important

costs that any organization must afford to achieve its objectives (20). Despite its importance, this study showed that the payment system with the mean score of 2.63 is one of the factors with high impact on human resources malfunction (Table 3), and needs corrective actions. Because for employees pay is a highly emotive subject which raises subjective perceptions of fairness, indicates worth as an individual to an organization and may have significance as an indicator of social status as well as determining a standard of living (21).

In addition to the efforts to reform the payment system, paying particular attention to appointments, job promotion and performance evaluation is also important because, these factors were important in human resource malfunction in the staff department of the University. Decisions on performance evaluation and appointment and promotion in organizations, are among important decisions that managers make, because performance evaluation helps in identifying the effectiveness and the efficiency of employees in carrying out their assignments (22), which in turn results in better quality services.(23).

Anyone who is working in an organization or institution, after gaining experience and acquiring skills, expects job promotion in his/her career (24), thus providing equal opportunity for promotion and developing fair performance evaluation systems are important factors for employees' satisfaction. However, employees' attitudes toward this aspect was not positive so revision of performance evaluation and promotion and the appointment system should be placed on the organization improvement agenda at Kerman university of medical sciences.

Conclusion

This study showed that dissatisfaction with the salary system, performance evaluation and promotion and the appointment system are the most important malfunctions of human resources

at staff departments. These factors have also been reported in previous studies. It seems they are not confined to our setting and are more fundamental, so, solving these problems is beyond the authority of executives. Therefore, the Presidential deputy of human capital can provide fundamental change in public organizations through a review of payment systems and performance evaluation in the hope of increasing employees' motivation as an instrumental goal for productivity improvement.

If employees feel that what they receive from the organization is less than their real value, they may leave the organization so an appropriate payroll system should be dependent on employees' performance with a special emphasis on output and income of the organization.

Recognition of hardworking employees and creating incentives to improve employees should be the major reason for performance evaluation. While, classical managers historically used performance evaluation to control the employees' work, today managers consider it as a useful tool for better human resources management. The results of performance evaluation must be available to the managers in order to make timely and necessary decisions to enhance the quantity and quality of the staff. Thus, the ultimate objective of performance evaluation is efficiency and effectiveness of the organization, not punishment and reprimand of the employees.

Today, human resources development is not only achieved through specialized and technical training, but also the staff should be trained by a comprehensive education system, so to meet this need, human resource development should create some objectives to achieve the desired system, such as: creating scientific awareness and promoting the knowledge and information of the employees, improving abilities and qualifications of the staff and organizations, promoting social awareness of employees, developing job skills and

abilities, improving performance, updating employee information, promoting the job and preparing for a promotion, problem solving, orienting new employees with the objectives of the organization, personality development, values and ethics.

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Clinical Indications of Electroencephalogram in Children

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Abstract

Aim of the study: The present study was done to obtain a base-line for clinical indications of EEG in children and to evaluate the Electroencephalography (EEG) ?ndings in children with various acute, chronic CNS disorders and non-epileptic events.

Patients and methods: The Electroencephalography (EEG) records of 250 patients were studied, which was carried out at the Neurophysiology Departments of Queen Rania AL-Abdullah Hospital for children in Jordan. For each patient who underwent EEG recording the following data was recorded: age, sex, source of referral (inpatient department or outpatient), reason for Electroencephalography (EEG), diagnostic impressions and clinical presentation, the result of the EEG examinations and the clinical correlation between the seizure type and EEG finding.

Results: Males slightly outnumbered females, with 55% males. The majority of cases sent for EEG fell between 6-12 years. A total of 63.2 % of all referrals for EEG were from the outpatient clinic while inpatients accounted for 36.8%, Pediatric Neurology Department referrals being the highest 28.8 %, and the majority of diagnoses at referral were suspected epilepsy (80%). Epileptiform EEG abnormalities were detected in (32%). Overall 64 % of the EEG records were normal. All EEG records of children with syncope and headache, were normal.

Conclusion and recommendation: We conclude that there are many unnecessary routine EEG recordings in children. Investigation of epilepsy and acute encephalopathies appear to be the most valuable indications for routine pediatric EEG. EEG can help in the classification of the seizure, and finding a way to reduce EEG requests is requested.

Keywords: Epilepsy; Electroencephalography; paroxysmal event

Introduction

A huge number of publications have documented the type and frequency of Electroencephalography (EEG) abnormalities in many different childhood disorders (1). EEG is a very important test in investigating children with various neurological disorders, particularly epilepsy. The EEG is also a sensitive marker of diffuse cortical dysfunction as seen in toxic, metabolic, or hypoxic encephalopathies (2).

Although the diagnosis of seizures and epileptic syndromes is primarily clinical, EEG often provides supportive evidence and helps in seizure classification (3).

Many episodic events may simulate epilepsy including breath holding spells, syncope, tics, migraine related phenomena (e.g. benign paroxysmal vertigo), and psychogenic seizures (4). These events are associated with normal neurological examination and interictal EEG, however, although EEG is requested, a complete event description accurately identi?es the nature of these events in most cases (5).

Practice parameters endorsed by the American Academy of Pediatrics, recommend use of EEG after non febrile seizure in children, as standard of care (6), however non neurologist physicians differ in their expertise in clinically identifying seizures and many have a tendency to exclude almost any paroxysmal events such as syncope, tics or staring spells in attention deficit hyperactivity disorders, in their definition of seizures. (7) Moreover EEG is now easily accessible because of its safety and low cost-benefit ratio (8). This has led to an indiscriminate overuse of EEG in clinical practice decreasing the yield of the clinical useful information. In one study, up to 40% of EEG requests were considered to be unnecessary (9).

The present study was done to obtain a baseline for clinical indications of EEG in children, who pay regular visits to the Pediatric Departments of Queen Rania AL-Abdullah Hospital for children, to evaluate the EEG findings in children with various acute and chronic CNS disorders, to assess the relationship between the clinical indication and EEG abnormalities and assess the predictability of a normal EEG result.

Patients and Methods

This a retrospective study, which included 250 consecutive EEG recordings, which were requested by the pediatrician, child neurologist, and family doctors. All EEGs were performed in the Neurophysiology Unit of the Queen Ranai Abdullah Hospital for children in Jordan.

For each patient who underwent EEG recording the following data was recorded: age, sex, source of referral (inpatient department or outpatient), reason for EEG, diagnostic impressions and clinical presentation, the result of the EEG examinations and the clinical correlation between the seizure type and EEG finding.

All EEG studies were recorded digitally and reviewed according to standard clinical practices at the Clinical Neurophysiology Laboratory of Queen Rania Abdullah Hospital for children. All studies utilized both bipolar and average referential montages performed by using a 8-16 channel digital recording with electrodes placed according to the international 10-20 systems. Routine EEG consisted of a normal recording of 20-30 minutes, including three minutes hyperventilation and intermittent photic stimulation at various frequencies.

The EEGs abnormalities were classified: focal or multifocal spike waves, generalized epileptiform discharges, focal or diffuse background disturbance, burst suppression pattern and spindle coma.

Requests for EEG are a written requisition, based on the indications such as description of events.

The clinical indication responsible for requesting the EEG was one of the following categories: (1) established epilepsy; (2) non-epileptic paroxysmal events (e.g. migraine, syncope, breath holding spells); (3) acute CNS disorders (e.g. toxic metabolic, infectious, or hypoxic encephalopathy); and (4) non-epileptic chronic CNS disorders (e.g. mental retardation, autism, attention disorder).

In patients with both clinical and EEG evidence of epilepsy, seizures were classified according to the international classification of the the International League Against Epilepsy (ILAE) (10).

At the end of each assignment, the EEG requisitions were reviewed for clinical correlation. At this stage the relationship between the clinical indication and EEG result was recorded for further study.

Results

A total number of 250 recorded EEGs were studied. Among these, males slightly outnumbered females, with 55% males. The age ranged between four months and 14 years; patients under 10 years constituted more than 50 % of the study population. The majority of cases were between 6-12 years of age. The age distribution of all patients is as shown in Table 1.

A total of 63.2 % of all referrals for EEG were from outpatient clinics while inpatients accounted for 36.8%. There was a broad spread of referrals from major specialists of Pediatrics, Psychiatry, Neurosurgery and Intensive Care Units. Pediatric Neurology Department referrals being the highest at 28.8 %. The source of referrals of patients for EEG are as shown in Table 2 (opposite page).

The majority of diagnoses at referral were suspected epilepsy (80%); epileptiform EEG abnormalities were detected in (32%). The diagnoses at referral are shown in Figure 1 (opposite page).

The seizure types in patients with a history of epileptic seizures and epileptiform EEG abnormalities are shown in Table 3 (page 16).

The majority of the seizures were partial seizure with secondary generalization. Primary generalized seizures were uncommon, with petit mal absences accounting for only 9.3 % of the total seizures. The majority of patients with epilepsy were referred for EEG to confirm the diagnosis; 5.5% were referred because of poor seizure control and 1.6% referred to exclude space occupied.

Age	Number	(%)	Normal EEG (%)	
> 1 years	38	(15.2)	26	(10.4)
1-3 years	48	(19.2)	24	(9.6)
3-6 years	42	(16.8)	29	(11.6)
6-9 years	52	(20.8)	31	(12.4)
9-12 years	38	(15.2)	23	(9.2)
12-14 years	32	(12.8)	27	(10.8)
Total	250	(100)	160	(64)

Table 1 : Age range in all patients compared with normal Electroencephalography

Department	Inpatients		Outpatients		Total	
Neurology	25	(10)	47	(18.8)	72	(28.8)
Neurosurgeon	18	(7.5)	20	(8)	38	(15.2)
ICU	17	(6.8)	-		17	(6.8)
Emergency	-		32	(12.8)	32	(12.8)
Psychiatric	6	(2.4)	17	(6.8)	23	(9.2)
General pediatrician	6	(2.4)	12	(4.8)	18	(7.2)
Others	20	(8)	30	(12)	50	(20)
Total	92	(36.2)	158	(63.2)	250	(100)

Table 2: Source of patient referrals for Electroencephalography

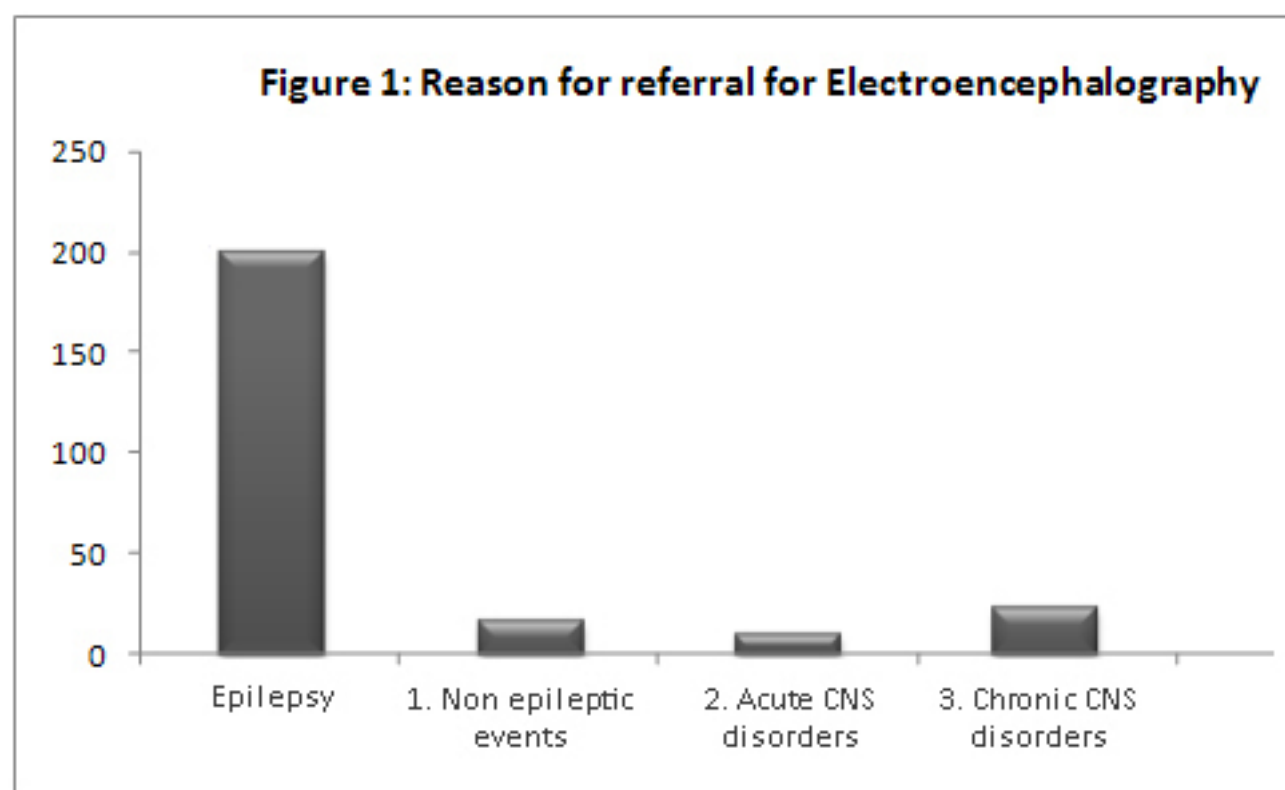Figure 1: Reason for referral for Electroencephalography

Figure 1: Reason for referral for Electroencephalography

1. Such as syncope, breathe holding, staring, migraine,
2. Such as : Toxic metabolic, infectious, or hypoxic encephalopathy
3. Such as: Autism, attention disorder, learning disability

Seizure type	No. of patients	%
Primary generalized		
Tonic–clonic	12	18.6
Petit mal	6	9.3
Myoclonic	10	15.6
Partial		
Simple	18	28.2
Complex partial	14	21.9
With secondary generalization	4	6.3
Total	64	32

Table 3 : Clinical and Electroencephalography classification in patients with seizures confirmed by Electroencephalography

EEG FINDING	No.	(%)
Normal	160	(64)
Focal or multifocal spikes	36	(14.4)
Generalized epileptic activity	28	(11.2)
Focal background disturbance	8	(3.2)
Diffuse background disturbance	11	(4.4)
Others	7	(2.8)
Total	250	(100)

Table 4 : Electroencephalography results

Attention deficit hyperactivity disorders were 9.1%, learning disabilities 2% , tic disorders and 1.1% others (including mental retardation, head trauma, behavior disorders, metabolic).

Overall 64 of the the EEG records were normal, 14.4 % had focal or multi focal spikes, generalized epileptic activity 11.2% , while others (spindle coma, burst suppression, hypsarrythemia) forming 2.8% (Table 4) (Samples Figures 2, 3 - opposite page)

Epileptic activity was rarely found in the non-epileptic group of patients with non-epileptic conditions there was no epileptic activity. All EEG records of children with syncope, headaches were normal.

Discussion
This study highlights certain important issues in the utility of EEG in children. The EEG was very helpful in diagnosing epileptic syndrome and in seizure classification. The EEGs of some patients with epilepsy also revealed completely unexpected findings that strongly infuenced their

management. This highlights the very important role of EEG in patients with epilepsy.

The age distribution of patients with this study, showed patients under 8 years constituting 50 % of the study population, which probably reflects that the majority of cases with epilepsy, belong to this age group. The progressive increase in the proportion of patients with normal EEG with increasing age group is well known in patients with epilepsy (11 ,12) who make up of some 65% of our patients.
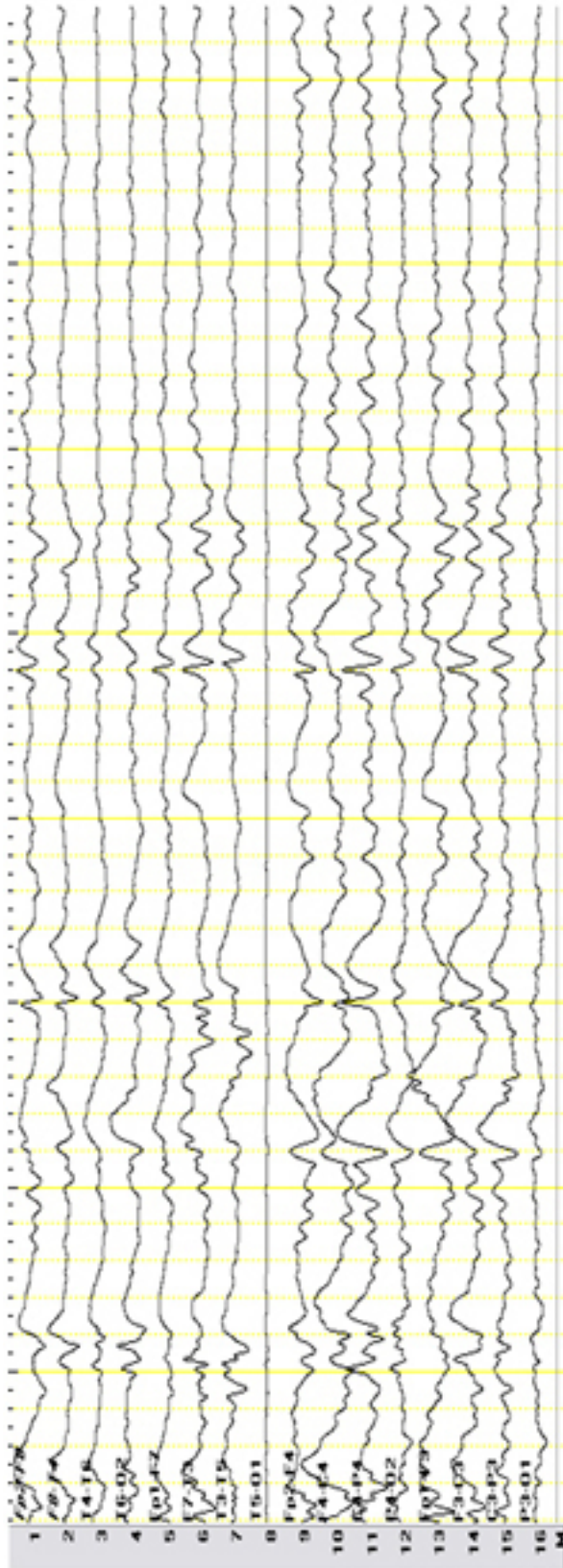
Figure 2 : Electroencephalography showing partial epileptic activity over right side of brain
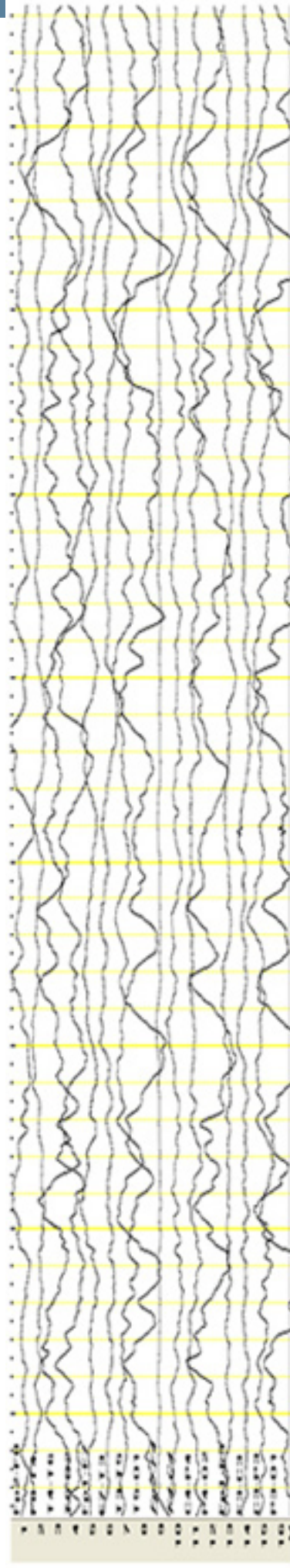
Figure 3 : Electroencephalography showing abnormal background suggestive of encephalopathy process

Two thirds of our referrals were in outpatients, similar to findings for Neurophysiology investigations in developed countries (13).

Most children (98%) with non-epileptic paroxysmal events (e.g. migraine, syncope, and breath holding spells) had a normal EEG. Other investigators found normal EEGs in up to 87.5% of adults with non-epileptic paroxysmal events (headache, syncope, and vertigo) (14).

We think that there are some special reasons that lead to EEG requests for, non-epileptic disorders. Firstly, they are done to exclude epilepsy. It is well known that a small percent of children without any neurologic disorder have EEG abnormalities (15). Also well children with epilepsy may not show interictal EEG abnormalities. (16) The second reason may be a lack of understanding of the limits of EEG recording and interpretation. (14). The EEG is therefore not helpful in these children and a complete event description will accurately identify the nature of these events in most cases (16). More than 10% of normal people may have non-specific EEG abnormalities and approximately 1% may have 'epileptiform paroxysmal activity' without seizures (17). The prevalence of these abnormalities is higher in children, with 2-4% having functional spike discharges. It is of interest that an attempt to provide guidelines to physicians for appropriate EEG use may not alter their practice (18).

In a review it was found that in EEGs in people with epilepsy, 30% of patients' EEGs contained epileptiform discharges, which is close to our study (19). Taken together, these studies suggest an 80% chance of showing epileptiform activity in a first wake-and-sleep EEG in people with epilepsy. Provided there is no other evidence of cerebral disease, epileptiform activity is rare in those who are and will remain free of epilepsy. It is therefore the practice to offer referring doctors the ability to order a combined routine and sleep EEG as the first investigation

in patients with epilepsy. This policy reduces costs and inconvenience to patients in an epilepsy service but is inappropriate for patients with a low chance of having epilepsy, and therefore requires some discrimination by the doctors (20).

The EEG has many uses in epilepsy but may also be abused. The situations in which the EEG can contribute to the diagnosis of epilepsy are rare. Once the diagnosis of epilepsy is established, the EEG is probably the most important investigation in helping to define the type of epilepsy, the prognosis, and the initial approach to therapy. In partial seizures, EEG is the investigation of first choice for localization and is an important part of the work-up for the few patients who come to epilepsy surgery (22).

Some investigators found that hyperventilation (HV) and photic stimulation contributed little to the final EEG report (14). Many of our children with focal or generalized epileptiform discharges had spike activation on photic or HV (19%). HV was particularly helpful in children with absence epilepsy, which is consistent with the findings of other investigators (23).

In a recent review of EEG studies of children with ADHD, it was concluded that between 30% and 60% of such children showed abnormal EEG ?ndings, including generalized and/or intermittent slowing. Further, there was some evidence that the EEG abnormalities decreased with age, with contradictory reports of poor or no correlation between abnormal EEGs and treatment response (24).

However, some of the ADHD children were found to have an abnormal EEG in a recent study in which the authors concluded that routine EEG screening is of limited value in childhood behavior problems (25) because co morbidity of ADHD and epilepsy exist in accordance with previous reports (26).

Conclusion and Recommendations

We conclude that there are many unnecessary routine EEG recordings in children. Investigation of epilepsy and acute encephalopathies appear to be the most valuable indications for routine pediatric EEG. Finding a way to reduce EEG requests should be done since with EEG being requested, the effect of cancelling the test may be to undermine the patient's confidence in their physician. Physician education seems more palatable.

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Hyperparathyroidism in Pregnancy

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Abstract

Hyperparathyroidism during pregnancy is rare, and it carries complications to the mother and fetus. Diagnosis can be very difficult, and it represents a challenge for the treating physician. Most of the time, parathyroidectomy is the treatment of choice.

Key Words: hyperparathyroidism, pregnancy, hypercalcemia

Hyperparathyroidism in pregnancy

Incidence of primary Hyperparathyroidism in women of child bearing age is about 8/100,000 population per year (1,2), and is even more rare during pregnancy, with 150 cases reported in the medical literature. The first case of hyperparathyroidism during pregnancy was reported by Hunter et al, in 1931. Most of the cases are due to parathyroid adenoma.

The patient may be totally asymptomatic, or have symptoms of gastrointestinal symptoms like anorexia, nausea and vomiting (4). There could also be mental symptoms such as headache, agitation, confusion, lethargy, inappropriate behavior and delirium (4).

In the mother, rate of complication is up to 67%, and in the fetus is up to 80% (5, 6). The commonest maternal complication is nephrolithiasis which is found in 24%-36% of reported cases (5,7, 8). Other maternal complications include Hyperemesis gravidarum (5), increased incidence of preeclampsia (5), cystic osteoid fibrosis (7), and pancreatitis (7, 9, 10). The most feared maternal complication is hypercalcemic crisis, and it occurs when serum calcium level is more than 14 mg/dL, and is associated with nausea, vomiting, weakness, dehydration, mental state changes, uremia, coma and death (6, 11, 12), and this complication could happen either during pregnancy or postpartum (11). Fetus complications include miscarriage, preterm birth, intrauterine growth retardation, low birth weight, intrauterine fetal death, and in the postpartum period there is a risk of neonatal tetanic crisis, because of neonatal hypocalcemia, due to suppression of fetal parathyroid function by maternal hypercalcemia (11, 13, 14, 15).

Measuring serum calcium, and parathyroid hormone levels, helps in making the diagnosis, but some asymptomatic pregnant patients might have normal serum calcium (16). It is recommended that for any neonates showing seizures or tetany, the mother's serum calcium level should be checked along with parathyroid hormone level to exclude hyperparathyroidism (1). Neck ultrasound has 69% sensitivity and 94% specificity (17). If ultrasound cannot localize an adenoma, magnetic resonance imaging (MRI), could be considered (18). Technetium-99m sestamibi is contraindicated in pregnancy (17).

In asymptomatic patients, management may be controversial (19). Medical Management includes hydration with normal saline (20), oral phosphate (15), administration of magnesium sulfate (21), and calciuretic diuretics (22). Bisphosphonates are not recommended during pregnancy (23). Parathyroidectomy is the treatment of choice in all pregnant patients with symptoms (24,25,26,27,28), and is best considered in the second trimester (11, 18, 25). Schnatz (11) proposed indications for parathyroidectomy in pregnant patients, (Table 1 - opposite page).

1. Symptoms of primary hyperparathyroidism
2. Elevation of serum calcium >12 mg/dL (2.93 mmol/L)
3. Reduction of age and pregnancy-matched creatinine clearance by more than 30% without another explanation
4. Presence of nephrolithiasis or nephrocalcinosis
5. History of a life-threatening hypercalcemic crisis
6. Increase in urinary calcium excretion: more than 400 mg of calcium in a 24-hour urine collection
7. Evidence of bone involvement
8. Coexisting illness that may complicate the disease progression or subsequent management
9. Concern for noncompliance or inconsistent follow up
10. Patient requests surgery

Table 1: Indications for surgery in the pregnant patient (11)

Conclusion

Hyperparathyroidism in pregnancy can be a diagnostic and treatment dilemma. It is rare during pregnancy, but carries serious complications to the mother and fetus. It is very important that the patient is followed closely by a multidisciplinary team consisting of endocrinologist, high risk obstetrician and head and neck surgeon. Parathyroidectomy is the treatment of choice in most of the cases.

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Distribution of Diabetes Mellitus among the Saudi Adult Population - A National Survey

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Abstract

Background And Objectives: Updated information on distribution of Diabetes Mellitus is needed for improvement of health services and resources allocation. This study aimed to describe the distribution of Diabetes Mellitus among the Saudi Adult Population and its associated risk factors.

Settings And Design: A cross-sectional community based study covering the whole of the Kingdom of Saudi Arabia. The WHO STEPwise approach to Surveillance (STEPS) of Non-Communicable Diseases (NCD) risk factors was the basis for conducting the survey and collecting data.

Methods: 4,657 participants were included, 2312 (49.2%) males and 1345 (50.8%) females, using a multistage stratified random sample method.

Results: 712 (15.3%) reported to be known diabetics. 16% (369/2312) of males were diabetics, while 14.6 % (343/2345) of females were diabetics. 43% (231/537) among age group of 55 to 64 years were diabetics. The northern region had the highest prevalence (20.8%) compared to other regions of Saudi Arabia. About 20.1% (326/1628) of the obese people with (Body Mass Index 30-39.9) were diabetics. 24.3% (232/956) of those with central obesity were diabetic compared to only 13.5% (455/3370) of those who did not have central obesity. 25.6% (219/857) of people with a high cholesterol level were diabetics. 180/392(45.9%) of hypertensive people were diabetics. Multivariate analysis showed that age, living in the northern region and central obesity are significant predictors for DM.

Conclusions: Diabetes Mellitus is prevalent among the Saudi adult population. It is increasing with age, family income, Body Mass Index, and central obesity, and is also correlated with a high lipid profile.

Keywords: Diabetes mellitus, epidemiology, Saudi Arabia

Introduction

The world is facing a growing diabetes epidemic of devastating proportions. Its impact will be felt most severely in developing countries (1). The number of people with diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity (2). The prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030 (2). The prevalence of diabetes mellitus among Saudi adults was found to be 15.8% (3). Evidence from several studies indicates that obesity, undergoing rapid changes in lifestyle, hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes (4, 5). Diabetes is one of the major causes of premature illness and death worldwide. Non-communicable diseases including diabetes account for 60% of all deaths worldwide. Besides excess healthcare expenditure, diabetes also imposes large economic burdens in the form of lost productivity and foregone economic growth. Unless addressed, the mortality and disease burden from diabetes and other Non-Communicable Diseases (NCD) will continue to increase (6). Determining the prevalence and associated factors of diabetes mellitus is important to allow for national planning, prevention and control. Therefore, the aim of the present study is to determine the prevalence of diabetes mellitus and associated factors among the Saudi adult population.

Subjects and Methods

This was a cross-sectional community based study covering the whole of the Kingdom of Saudi Arabia in 2005. The WHO STEPwise approach to Surveillance (STEPS) of NCD risk factors was the basis for conducting the survey and collecting data (7 , 8). Known history of diabetes mellitus was the basis for inclusion into the diabetes mellitus group.

Study population : The study population was all the Saudi population of all the 20 health regions of the country aged 15 - 64 years.

Sampling : A multistage stratified cluster random sampling technique was used to recruit the study subjects. Stratification was based on age (with five 10 year age groups), gender (2 groups) and health regions of the country. Based upon the proposed methodology of the WHO STEPwise approach, a sample size of 196 was calculated for each of these ten strata. A list of all Primary Health Care Centers (PHCCs) in each region was prepared and 10% of these PHCCs were randomly chosen, and were allocated a regional sample, proportionate to the size of their catchment population, in sampled PHCCs. To identify the households a map of the health center coverage area was used to choose the houses. Each house was assigned a number and a simple random draw was made.

Data collection :

Tool used : Data was collected by a questionnaire, physical measurements and biochemical measurements. The questionnaire was translated into Arabic by a team of physicians and was back translated to ensure the accuracy of translation. The Arabic instrument was pre-tested on 51 eligible respondents for wording and understanding of the questions, and necessary adjustments were made to the instrument in light of the pretest.

Data collectors: Data was collected by 54 males and 54 female collectors who worked in teams. Each field team was made up of four persons: a male data collector, a female data collector, a driver and a female assistant. Data collection teams were supervised by a hierarchy of local supervisor, regional coordinators and national coordinator.

Training of data collectors : All individuals involved in data collection attended comprehensive training workshops that included interview techniques, data collection tools, practical applications and field guidelines.

Data management and analysis: Questionnaires collected from the field were reviewed by team leaders assigned to each team before submitting them to the headquarters for data entry. Double entry of the questionnaires was performed using EPI-INFO 2000 software and EpiData software developed by the Menzes centre for validation. After data entry, data cleaning was conducted. New variables were defined by adopting the standard Steps variables (STEPS Data Management Manual, Draft version v1.5, October 2003). Data analysis was conducted using SPSS (Version 17) software. The number of participants' responses used in the discrete statistical analyses varied due to missing data for certain variables.

Ethical clearance and confidentiality: The protocol and the instrument of the surveillance were approved by the Ministry of Health, Center of Biomedical Ethics and the concerned authorities in the Kingdom. Informed consent of all subjects was obtained. Confidentiality of data was assured and that data will be used only for the stated purpose of the survey. Details of the method used and sampling procedures can be found in STEPwise documents. (7 , 8)

Results

From Table 1 (next page), of the total 4,657 subjects who participated in the study 2,345 (50.4%) were females and 2,312 (49.6%) were males. 369/2312 (16%) among males were diabetics, while 343/2345 (14.6%) among females were diabetics (p=0.206). The overall prevalence of diabetics was 712 (15.3%) of the sampled population, while non diabetics were 3,945 (84.7%).

The same table highlights the highest rate of diabetes among age groups and it was 55-64 years old; 231/537 (43%) (p<0.0001). The highest prevalence of diabetes mellitus was in the northern (20.8%) and central regions (20.6%) and lowest prevalence was in the southern region (10.7%).

Variable		Diabetics No. (%)	Non diabetics No. (%)	Total	P value
Gender:	Male	269 (16)	1943 (84)	2312	0.206
	Female	343 (14.6)	2002 (85.4)	2345	
	Total	712 (15.3)	3945 (84.7)	4657	
Age (Years):	15- 24	23 (2.2%)	1023 (97.8%)	1046	0.000
	25- 34	40 (3.6%)	1064 (96.4%)	1104	
	35- 44	162 (14.2%)	979 (85.8%)	1141	
	45- 54	256 (30.9%)	573 (69.1%)	829	
	55- 64	231 (43%)	306 (57%)	537	
Region:	Central	224 (20.6%)	866 (79.4%)	1090	
	Eastern	96 (13.6%)	610 (86.4%)	706	0.000
	Northern	94 (20.8%)	357 (79.2)	451	
	Southern	106 (10.7)	889 (89.3%)	995	
	Western	192 (13.6%)	1223 (86.4%)	1415	
Education:	None	304 (24.8%)	924 (75.8)	1228	
	Primary	215 (17.9)	981(82)	1196	0.000
	Intermediate	64 (8.6)	678 (91.4)	742	
	Secondary	65 (8.5)	702 (91.5)	767	
	University	51 (9)	516 (91)	567	
	Vocational	8 (6.8)	109 (93.2)	117	
Occupation:	Governmental	184 (13.6)	1170 (86.4%)	1354	
	Non- Governmental	20 (11.4)	155 (88.6)	175	0.000
	Student	12 (1.9)	622 (98.1)	634	
	Housekeeping	295 (17.3)	1412 (82.7)	1707	
	Retired	122 (39.7)	185 (60.3)	307	
	Unemployed	16 (8)	185 (92)	201	
Income:	<3000 SR	217(14.8)	1242(85.2)	1459	
	< 7000	253(14.4)	1495(85.6)	1748	0.000
	< 10000	67(12.3)	476(87.7)	543	
	< 15000	73(20.1)	362(79.9)	435	
	15000 +	39(17.1)	189(82.9)	228	

Table 1: Distribution of Diabetes Mellitus according to socio demographic characteristics of subjects

Regarding the educational level, the highest prevalence of DM was observed among non educated persons (24.8%) and the lowest was observed among the vocational education group (6.8%). Regarding occupation, it was noticed that the highest rate of diabetes was among the retired group (39.7%) (p<0.0001), while the lowest prevalence was among the students group (1.9%).

As regards family income and prevalence of DM, the highest prevalence of DM was among groups of income from 10,000 SR to less than 15,000SR (20.1%) (p<0.0001).

From Table 2, Body mass index was found to be associated with diabetes, since among the BMI group of less than or equal to 18.5 kg/m2 only 10/256 (3.9%) were diabetics, while it was much higher among the group of people with BMI ranging from 30 to 39.9 as 326/1628 where 20.0% were diabetics.(p<0.0001).

Central obesity was significantly correlated with diabetes also from Table 2; since 232/956 (24.3%) of people with central obesity (according to the WHO criteria) were diabetic compared to only 455/3,370 (13.5%) among people without central obesity problems (p<0.0001).

Variable	Diabetics No. (%)	Non diabetics No. (%)	Total	P value
BMI: Underweight (<18.5)	10 (3.9)	246 (96.1)	256	0.000
Normal weight (18.5-24.9)	111 (9.5)	1058 (90.5)	1169	
Overweight (25-29.9)	246 (17)	1205 (83)	1451	
Obese (>=30)	326 (20)	1302 (80)	1628	
Central obesity: Obese	232 (24.3)	724 (75.7)	956	
Not obese	455 (13.5)	2915 (86.5)	3370	0.000
Cholesterol level: Elevated (>=5.2mmol)	219 (25.6)	638 (74.4)	857	0.000
Not elevated (<5.2mmol)	472 (13.3)	3087 (86.7)	3559	
Level of Physical activity: High	84 (11.3)	658 (88.7)	742	
Moderate	114 (15.2)	636 (84.)	750	0.011
Low	474 (15.7)	2552 (84.3)	3026	
On hypertension treatment: Yes	180 (45.9)	212 (54.1)	392	0.011
No	48 (33.6)	95 (66.4)	143	
Ever smoking daily: Yes	113(19.5)	467(80.5)	580	
No	583(14.8)	3353 (85.2)	3936	0.003

Table 2: Distribution of diabetes mellitus according to some life style characteristics, hypertension and cholesterol level

Variable	Beta	Standard Error	P-value	Odds Ratio	95% C.I. for OR
Cholesterol Level	0.371	0.224	0.097	1.49	0.935, 2.246
Age	0.313	0.11	0.001	1.41	1.142, 1.738
Central region	0.55	0.24	0.053	1.74	0.993, 3.039
Eastern region	-0.048	0.32	0.882	0.953	0.505, 1.799
Northern region	0.73	0.37	0.049	2.076	1.005, 4.288
Southern region	-0.15	0.34	0.664	0.864	0.445, 1.675
Waist Hip Ratio	-0.58	0.23	0.013	0.561	0.356, 0.884
Constant	-1.55	0.80	0.054	0.213	

Table 3: Logistic Regression Model to Predict Diabetes from some Studied Variables

As regards physical activity, the highest prevalence of DM was among the group of low physical activity 474/3,026 (15.7%)(p<0.05).

The same table shows that 180/392 (45.9%) of the hypertensive people were diabetics (p<0.05).

In Table 3, Logistic regression model shows that age, northern region and waist hip ratio are significant predictors for diabetes. Besides; the logistic model kept both cholesterol level and other region in the model because of their importance for predicting diabetes as well.

Discussion

Diabetes mellitus, characterized by chronic hyperglycemia is a major global health problem emerging in developing countries. Quantifying the prevalence of diabetes and the number of people affected by diabetes, now and in the future, is important to allow planning and allocation of resources (2). The purpose of this study is to describe

the distribution of diabetes mellitus among the Saudi adult population, and its associated factors.

The present study showed that the prevalence of diabetes mellitus was 15.3% and this figure is in agreement with the prevalence of diabetes, reported by the International Diabetes Federation, among Saudi adults (20 -79 age group) in 2007 and it was 16.7% (9). A much higher prevalence was reported in another community-based national survey conducted by Al-Nozha et al (10) and showed that the overall prevalence of diabetes mellitus in the KSA was 23.7%. This disagreement could be explained by the difference of the participants' age groups in both studies.

This study revealed that the prevalence of diabetes is higher among males than females and this finding is consistent with other national and international studies (10-14). Moreover, our results showed that the prevalence of diabetes is increasing by age and reaches its highest rate among the oldest age group (55-64 years). These findings are also consistent with the statistics reported by the US Center for Disease Control and Prevention in which they mention that the percentage of U.S. adults with diabetes was 2.2% among those aged 20-39 years, 9.7% among those aged 40-59 years, and 18.3% among those aged 60 years and older (12). In another national survey conducted by Al-Hazmi et al, they observed a significant increase in the prevalence of Non Insulin Dependant Diabetes Mellitus and Impaired Glucose Tolerance with age, both in the total male and female populations and the same trend was observed in each province (13).

The present study showed that nine percent of the university educated participants were diabetic compared to about one-quarter of the non-educated participants. This figure is in agreement with the 2004 Hawaii Diabetes Report (15) as they documented that diabetes prevalence rates are inversely associated with educational attainment. Similar results were obtained from a systematic review and meta-analysis study (16); the authors reported that low levels of education, occupation and income were associated with an overall increased risk of type 2 diabetes.

The findings from this study underscore the importance of income in determining the risk of DM, in agreement with other studies(16-18). The association between income and diabetes risk appears to be complex. It may have been confounded with obesity which is found to be related to lower socioeconomic status (19). However, low income has been shown to be an independent risk factor for the development of diabetes even after controlling for body mass index and physical activity level (20). On the other hand low socioeconomic status and income could result from the disease itself by being off work due to disability related to diabetes complications. In cross-sectional studies like ours it is difficult to decide which factor preceded the other. On the other hand some studies claimed that lower wealth, but not income, may be associated with prevalence and incidence of diabetes among older adults in the UK (21).

Numerous studies have documented a strong positive association between obesity, as measured by BMI, and risk of type 2 diabetes in U.S. whites (22-28), and the National Health and Nutrition Examination Survey study has reported a similar relationship in blacks (22,25,29). The current study showed that 17% of the overweight group and 20.1% of the obese group and 19.4% of the morbid obese group were diabetic. In the study of hypertensive and diabetic patients attending the primary health care clinics in Riyadh, only 19% of patients were found to have ideal weight (BMI, <25 kg/m 2), while 35% were overweight (BMI, 25-29.9 kg/m 2), 41% were moderately obese (BMI, 30-40 kg/m 2) and 5% were morbidly obese (BMI >40 kg/m 2)(30). Logistic regression results of another study done by Alqurashi et al showed that BMI >25 and age were significantly associated with diabetes (31).

The present study showed that central obesity was significantly correlated with diabetes as about one-quarter of the obese group with central obesity were diabetic. Similar results were reported in a study conducted in the USA among black women and found that there was a strong linear trend of increasing risk of diabetes with increasing BMI. Waist circumference was associated with risk of type 2 diabetes even after control for current BMI. Similarly, there was a positive association between waist-to-hip ratio and risk of type 2 diabetes. There was no association between hip circumference and the risk of type 2 diabetes after control for current BMI(32).

Sedentary habits and low cardio-respiratory fitness are involved at several points in the progression from normal glucose metabolism to type 2 diabetes and premature mortality in individuals with diagnosed diabetes (33-35). Results of the current study showed that 15.7% of subjects with low level of physical activities were diabetic.

Increased urbanization in many communities including KSA has resulted in several environmental factors which may discourage participation in physical activity such as high-density traffic, low air quality, pollution, lack of parks, sidewalks and sports/recreation facilities. Studies in KSA showed that physical inactivity was high indicating the sedentary nature of the Saudi population(36,37). The overwhelming majority of men and women did not reach the recommended physical activity levels necessary for promoting health and preventing diseases (37).

An extensive review found that active smoking is associated with an increased risk of type 2 diabetes (38) and our findings revealed that almost one-fifth of the smokers were diabetic. Substantial evidence supports inclusion of the prevention and cessation of tobacco use as an important component of state-of-the-art clinical diabetes care (39).

Conclusion

Diabetes Mellitus is prevalent among the Saudi adult population. It is increasing with age, non educated group, increased family income, BMI, and central obesity and high blood cholesterol. Health education and preventive strategies should be instituted additional to current MOH efforts to control the problem.

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Contraceptive Use Dynamics among Married Women Attending Primary Health Care Centers in Mosul City, Iraq : A Cross-Sectional Study

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Abstract

Context: Family planning programs offer a variety of safe, effective, acceptable and affordable contraceptive methods to help women achieve their childbearing goals. Contraceptive use dynamics include: contraceptive prevalence, contraceptive failure, contraceptive switching behavior and contraceptive discontinuation.

Aim: The aim of this study was to analyze contraceptive use dynamics among married women (15-49 years) attending primary health care centers in Mosul city, Iraq.

Materials and Methods: Study Design: Cross sectional health facility based survey.

Study Setting: Mosul city, Iraq.

Study Participants: All women at childbearing age (15-49 years) who had ever used any contraceptives or who had not; attending the vaccination units at the chosen primary health care centers.

Data Collection Tool: Data collection was carried out by using a standardized questionnaire form which has a very good reliability (86%) and validity (83.2%).

Outcome Measures:
Contraceptive prevalence rate, contraceptive failure rate, contraceptive switching rate and contraceptive discontinuation rate were used in the analysis.

Results:
This study demonstrated the following results:
contraceptive prevalence rate was 50.4%, contraceptive failure rate (3.5%), contraceptive switching rate (15.9%) and contraceptive discontinuation rate was 13.4%. By constructing life tables for each outcome measure; intrauterine devices showed the longest duration of continuous use.

Conclusions: The prevalence of contraceptive use in Mosul city is just similar to the national one, and the latter is considered one of the highest rates among Arab countries. What is more, the present study showed that the use of contraceptions was associated with variable failure, switching and discontinuation.

Key words: family planning, contraception, prevalence, failure, discontinuation, switching, Iraq

Introduction

In October, 1999, the United Nations announced that the global population had reached the 6 billion mark (1); most of the increases in population growth can be attributed to the developing countries which make a great effort to encourage family planning (FP) programs by the use of contraception to reduce their fertility levels (2).

Contraceptive use is a dynamic process, and the dynamics of contraceptive use include the following four topics: contraceptive prevalence (CP), contraceptive failure (CF), contraceptive switching (CS) behavior, and contraceptive discontinuation (CD) (3).

As the level of CP rate increases, the continuity of use becomes an important measure of overall program effectiveness in meeting the needs of contraceptive users (4), since program efforts generally shift from recruiting new users to satisfying current users and encouraging re-adoption among those who discontinued use because of unwanted and mistimed pregnancies, would increasingly result from discontinuation of methods rather than failure to use contraception at all (5).

Unintended pregnancies remain a major health concern all over the world. Some of them occur due to non use of contraception, and others happen while women use contraception methods, whether modern or traditional (6). Contraceptive failure rate (CFR) is the proportion of conception that occurred during a month in which a woman (or her partner) was using a contraceptive method, as long as she did not report that she (or he) had stopped use before having become pregnant at a given point in time (7). It includes method or clinical failure and use failure rates (8).

Whereas contraceptive switching rate (CSR) is defined as the proportion of women who switch to another method within a month immediately following discontinuation at a given point in time (8). In view of the fact that contraceptive needs may change over time, probably due to the need of more effective methods, dissatisfaction, side effects, poor advice or simply the preferences of couples may have them wish to experience various other options available (9).

Contraceptive discontinuation rate (CDR) i.e. abandonment of contraceptive use is defined as the proportion of women who discontinue using a contraceptive method for various reasons other than switching at a given point in time, and it includes abandoning use with no further need of contraception and abandoning use while still in need of contraception because of side effects, health concerns, access/availability, cost, and spousal disapproval (8).

The aim of the present study is to analyze contraceptive use dynamics (CUD) among married women of child bearing age, attending primary health care centers in Mosul city, North of Iraq.

Subjects and Methods

To facilitate data collection, official permission was obtained from Nineveh Health Directorate (NHD) and informed consent was taken from each participating woman prior to the interview.

Study Setting

The present study was conducted in Mosul City, the center of Nineveh Governorate which has a total population of 1,317,594, comprising almost 179,720 married women of childbearing age (15-49 years) (10, 11).

Study Design and Target Population

The design of the present study is a cross-sectional clinic based design. Multistage cluster sampling was carried out, in which Mosul City was divided into two parts: right and left health sectors. From the right health sector, two primary health care centers (PHCCs) were chosen, and from the left, three PHCCs were selected by systematic sampling technique. The unit of the present study was a married woman of childbearing age (15-49 years), who attended the immunization unit of the chosen PHCCs.

Estimation of sample size was done according to the equation used by Gorstein et al.(12) In this equation 3 variables were used; the expected proportion of married women among the total population (p), in this survey a proportion of 14% was adopted (11); the desired level of absolute precision (d) used was 0.03, and the estimated design effect was to multiply the results of the above equation by 2 (12). Thus, the intended sample size was equal to 1400 married women of childbearing age who had ever used or had not, a contraceptive method (traditional and/or modern) and attended the immunization unit of the chosen PHCCs during the study period. Among them, 1051 women (who had ever used a contraceptive method) were interviewed to calculate contraceptive failure, switching and discontinuation components of the CUD. The total sample was divided amongst the five chosen PHCCs according to the proportion of married women (15-49 years) in the catchment areas of each PHCC. In each PHCC, selection of women was carried out by circular sampling in which the start was made randomly and every third woman thereafter was selected in a circular manner until the total sample size was reached from the target PHCC.

Data collection was carried out using a standardized specially designed questionnaire form which proved to have a very good reliability (86%) and validity (83.2%).The study period was three months from the 1st of October 2008 - 15th of January 2009.

Outcome Measures and Statistical Analysis

Data entry was done by using computer Pentium IV. SPSS package version 11.5 was used for the statistical analyses.

Different numbers, percentages and rates (CPR, CFR, CSR and CDR) were computed. Analysis of cumulative life tables by measuring

Components of CUD	Rates (%)	Proportion within each component
Contraceptive Prevalence Rate	50.4 *	N=706
Modern Contraceptives	29.6	58.7
Traditional Contraceptives	20.8	41.3
Contraceptive Failure Rate	3.5 **	N=37
Modern Contraceptives	1.4	40.5
Traditional Contraceptives	2.1	59.5
Contraceptive Switching Rate	15.9 **	N=167
Modern Contraceptives	10.3	64.8
Traditional Contraceptives	5.6	35.2
Contraceptive Discontinuation Rate	13.4 **	N=141
Modern Contraceptives	10.0	74.5
Traditional Contraceptives	3.4	25.5

*The denominator=1400 (All married women of childbearing age collected)
**The denominator=1051 (ever users of contraception collected)
Table 1: Components of contraceptive use dynamics in Mosul city, (October 2008-January 2009)

the rate of each type of contraception from the total number of women with contraceptive failure, switching, and discontinuation in 12, 24, and 36 months of use, was prepared. Median duration of use for each type of contraception was also calculated.

Results
Table 1 portrays the components of CUD; half (50.4%) of the study sample were using contraception, 29.6% for modern contraception, and 20.8% for the traditional forms. From all the women who had ever used a contraceptive method (n=1051), 3.5% have CF; less than two thirds (59.5%) of women with failure blamed

traditional methods. The overall CSR was equal to 15.9%; furthermore, two thirds of switchers (64.8%) switched from one modern contraceptive method to another, or to a traditional one. On the other hand, there were 141 women (13.4%) who ceased using contraception. Three quarters (74.5%) of them terminated a modern method.

The highest CFR in the 1st 12 months of use has been shown by withdrawal (27%), while IUD had no failure in the 1st year of use. Oral contraceptive pills had the shortest median duration of use before failure (10 months) only, while IUD had the

longest median duration of use (24 months), (Table 2 next page).

Table 3 (page 33) indicates that injections had the shortest median duration of use of contraception before switching (6 months), while IUD exhibited the longest median duration of continuous use (36 months). Injections and Lactation Amenorrhea (LA) had the highest switching rate during the 1st year of use (15%) each.

Table 4 (page 34) portrays the life table cumulative discontinuation rates. Male condom had the lowest median duration of continuous

Method	12 months	24 months	36 months	Median duration (months)	No. of women
Modern contraception					
OCP	8.1	10.8	13.5	10	5
Condom	5.4	8.1	13.5	18	5
IUD	-	2.7	2.7	24	1
Injections	2.7	2.7	2.7	12	1
Others	5.4	8.1	8.1	6	3
Total	21.6	32.4	40.5	**Average of median =14**	15
Traditional contraception					
Withdrawal	27.0	32.5	37.9	12	14
LA	8.1	18.9	18.9	16	7
Others	-	2.7	2.7	18	1
Total	35.1	54.1	59.5	**Average of median =15.3**	22
Total of both	56.7	86.5	100.0	**Average of median =14.5**	37

Table 2: Life table cumulative failure rates at 12, 24, and 36 months' duration of use, and median duration of use (October 2008-January 2009)

use (36 months). In the 1st 12 months of use, injection users exhibited the highest discontinuation rate (17%).

Discussion
Contraceptive prevalence rate is one of the most important determinants of fertility level. It is the indicator that determines the success of FP programs. In this study, half of married women (50.4%) used contraception whether modern or traditional, which in fact represents the total CPR in Mosul city. It is equivalent to the national CPR and similar to that of a number of countries like Kuwait and Palestine, (50%) each (13).

In the present study, the CFR was 3.5% which is just similar to what is found in France (3%) (14), and in urban Honduras (4%) (15). Surprisingly, a higher figure of CFR (9%) was reported by Trierweiler (16) in the USA in 2000. This does not reflect the better use of contraceptive methods in Iraq indeed, but due to the longer duration of the American study, the larger sample size, and the application of a household survey which makes the American results more representative than the present study. However, the total traditional CFR in the present study was higher than that of the USA (59.5% vs. 48%). The adoption of

traditional contraception is higher in the developing world (including Iraq) than in the developed countries, almost certainly due to the religious beliefs that support the use of these methods.

The current study showed that on the whole CSR was 15.9% which is just similar to that obtained by O'Fallon and Speizer (15) in urban Honduras (14%). A good number of women in the present study (64.8%) switched from one modern to a different modern or to a traditional method. A different rate was demonstrated by the Demographic and Health Survey (DHS) in Kenya, where the

Method	12 months	24 months	36 months	Median duration (months)	No. of women
Modern contraception					
IUD	7.8	10.1	22.1	36	37
Injections	15.0	17.4	19.2	6	32
OCP	10.8	15.0	16.8	10	28
Condom	3.6	5.4	6.0	12	10
Suppository	-	0.6	0.6	13	1
Total	37.2	48.5	64.7	Average of median=15.4	108
Traditional contraception					
LA	15.0	24.5	25.7	12	43
Withdrawal	3.6	5.4	9.0	21	15
Others	-	0.6	0.6	15	1
Total	18.6	30.5	35.3	Average of median =16	59
Total of both	55.8	79.0	100.0	Average of median =15.6	167

Table 3: Life table cumulative switching rates at 12, 24, and 36 months' duration of use, and median duration of use (October 2008-January 2009)

switching rate for modern methods was 57 %(17). Such variations in the switching pattern may be due to the difference in the study design, where DHS in the Kenyan study used the calendar for the collection of information, in addition to the diversity in the contraceptive use patterns across countries, and the subsequent different switching rates.

The present work depicted that the overall CDR was 13.4%; most of the study subset (74.5%) discontinued modern contraception. Blanc et al. (18) examined CDR across a varied set of 15 countries (including some Arab countries); they found that the total CDR in Egypt, Jordon and Morocco was 13.2%, 14% and 9.3% respectively.

In the present study, users of the OCP had the shortest median duration of use before failure (10 months), while IUD exhibited the longest duration of use (24 months). The highest CFR in the 1st 12 months was shown by withdrawal (27%). An earlier study conducted by Moreau et al.(14) in France in 2007 demonstrated that male condoms had the shortest median duration of use (6.6 months), and IUD again had the longest median duration of use (35.5 months). The same study demonstrated that 3% of French women experienced a CF in the first year of use; withdrawal accounted for about 10.1% of them.

In the present work, both injections and LA had the highest switching rates during the 1st year of use (15%) each. In Kenya, DHS found that, in the 1st year of use, injections had the lowest switching rate (0.3%), in addition to condoms which had the

highest switching rate (11%) (17). The divergence in rates between the two studies may be due to the limited contraceptive choice in Kenya.

For CD the present survey showed that male condoms had the lowest median duration of continuous use (3.5 months), while IUD presented the longest median duration of continuous use (36 months). A similar trend had been found in Philippine, where male condom had the shortest median duration of use (6 months), and IUD also had the longest median duration of use (36 months) (19). In the present study for the 1st year of use cumulative discontinuation rate depicted that injection users exhibited the highest discontinuation rate (17%), similar to that of Brazil (17%) (20).

In the present study half of the women of childbearing age had used contraception, whether modern or traditional. Contraceptive failure occurred among 3.5% of them, switching among 16%, and a similar figure was reported for discontinuation.

Provision of a variety of modern contraceptive methods, and a well designed FP education program stressing the correct and consistent use of different options of contraceptive methods is strongly needed.

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Ataxia, oculomotor apraxia and school failure: a case of ataxia-telangiectasia

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Abstract

Ataxia-telangiectasia (AT) is a complex multisystem disorder characterized by progressive neurological impairment, variable immunodeficiency and oculocutaneous telangiectasia. AT is a member of chromosomal breakage syndromes and it is caused by a mutation in the ataxia-telangiectasia mutated (ATM) gene. We report a case of a six-year old boy affected by AT who presented with episodes of falling during exercises and small conjunctivae and skin telangiectasias on physical examination.

Introduction

Ataxia-telangiectasia (AT) is an autosomal recessive disease resulting in progressive degeneration of multiple systems in the body.(1) AT was first reported by Syllaba and Henner in 1926, but it was only in 1957 that this condition was entirely described as a new entity by Boder and Sedgwick.(2)

It is characterized by progressive cerebellar ataxia, oculocutaneous telangiectasias, increased sensitivity to ionizing radiation, predisposition to lymphoid malignancies and a variable degree of immunodeficiency. The prevalence is estimated to be between 1:100,000 and 1:40,000 with both male and female subjects being equally affected.(3)

This condition has several aspects that are highly important to be recognized by the family practice physician. AT isn't a rare condition; next to tumors of the posterior fossa, it is the most common cause for progressive ataxia in children younger than 10 years of age. (4) Another important aspect of this disorder is its clinical, radiological and laboratorial unique features making this entity easily diagnosed on purely clinical grounds, often by inspection alone or by readily available diagnostic tools. (5)

Finally, the immunodeficiency caused by this disorder leads to a higher incidence of sinopulmonary infections. Therefore, it is of vital importance to every physician to be aware of the increased radiosensitivity and the possibility of lymphoid malignancies.

Herein we describe a typical case of AT referred to a primary care facility along with a description of the clinical, radiological and pathophysiological aspects of this condition that are important to be recognized by the family practice physician.
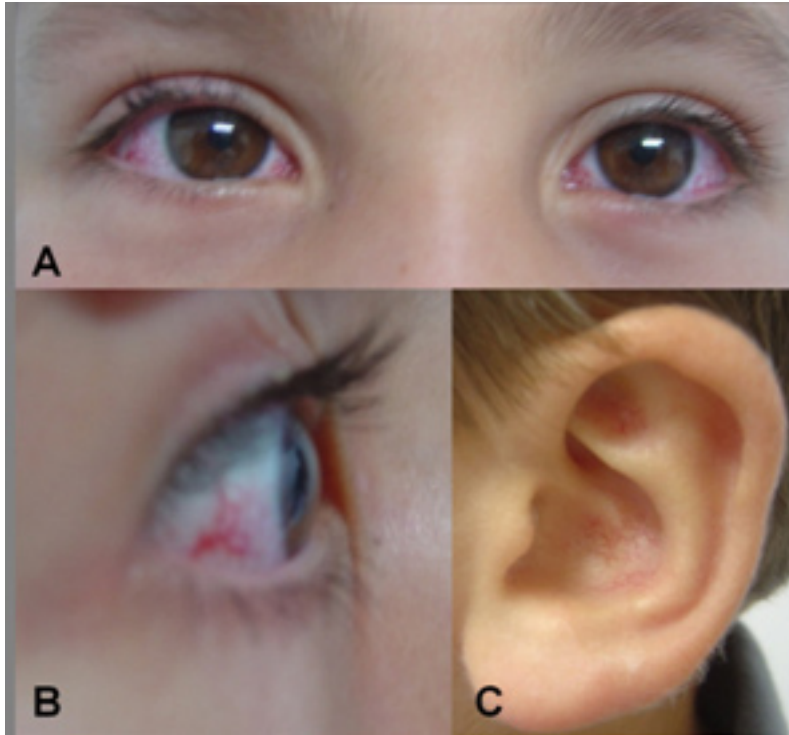
Case Report

Figure 1: A and B show oculocutaneous telangiectasias and C, a skin telangiectasias on ears

A six-year-old boy was referred to pediatric consult by his teacher due to school failure and frequent episodes of falling during physical education classes. The patient was born to non-consanguineous parents, by normal delivery, with an uneventful gestational and neonatal history. His early development was normal and he also presented normal neuropsychomotor acquisitions.

There was no family history of neurological diseases except for an aunt with the diagnosis of multiple sclerosis.

The patient was previously healthy, without clinical history of any medical conditions, receiving neither prescribed medications nor over-the-counter medications.

On physical examination, he was noted to be in good overall condition, but it was noted the presence of small conjunctivae and skin telangiectasias on his ears (Figure 1a-1b-1c).

The neurological examination evidenced that the patient was fully alert and presenting a slurred explosive speech. His motor examination was noteworthy for an ataxic gait, mild dysmetria and dysdiadococinesia. The patient also presented with oculomotor-apraxia.

The laboratory examination showed elevation of serum ?-fetoprotein (AFP) levels 164.6 ng/mL (reference range < 7 ng/mL) and signs of immunodeficiency, with low levels of immunoglobulin E (IgE) 1.6 mg/dL (reference range 393 UI/mL) and immunoglobulin A (IgA) 14.1 mg/dL (reference range 86-320mg/dL); and levels of immunoglobulin G (IgG) 667.8 mg/dL (reference range 656-1350mg/dL) and immunoglobulin M (IgM) 129.5 mg/dL (reference range 120-320mg/dL) within normal limits.

Magnetic Resonance Imaging (MRI) was performed showing signs of cerebellar atrophy (Figure 2 - opposite page).

The hospital´s Ethics Committee approved this case report and his parents gave informed consent for publication.

Discussion

The diagnosis of AT syndrome is first suspected in patients over one year of age who show ataxia or significant motor incoordination.(6) It is also important to note that those symptoms of progressive incoordination may be misinterpreted as school failure due to progressive difficulties in reading and in handwriting. Our patient was first referred by his physical education teacher for frequent fallings as well as by his school teacher due to writing difficulties.

As the disease evolves, additional clinical features become apparent such as lack of coordination of the head and eyes in lateral gaze deflection, ocular and cutaneous telangiectasia, laboratory findings of elevated serum AFP, immunoglobulin deficiencies, mainly of the IgA and IgG subclasses and MRI findings of cerebellar, and occasionally, vermian atrophy.(7)

On differential diagnosis, there are four well-known disorders that are characterized by progressive cerebellar ataxia, oculomotor apraxia, involuntary movements, and peripheral neuropathy. They are autosomal recessive diseases differentiated from each other based on clinical and laboratory features (Table 1 - page 38).(6)

AT is the most common of those disorders, with a unique clinical pattern that makes it relatively easy to diagnose solely on a clinical basis once the neurodegeneration and ocular telangiectasia have developed, and its diagnosis can be confirmed based on readily available tools such as AFP, immunoglobulin assays and MRI.(7)

Pathophysiologically, AT results from mutations in a single gene (ataxia-telangiectasia, mutated; ATM) on chromosome 11, encoding a large protein (ATM) which is involved in mitogenic signal transduction, intracellular protein transport, and cell-cycle control. In the absence of ATM, the cell-cycle does not stop for repair of double-stranded DNA breaks, such as those caused by ionizing radiation.(8)

Figure 2. Axial T2, axial FLAIR and coronal FLAIR MRI images show cerebellar cortical atrophy, manifested as diminished cerebellar size, dilatation of the fourth ventricle and increased cerebellar folial prominence

Those mutations confer to patients with AT a high sensitivity to radiation, increased susceptibility to neoplasms, particularly lymphomas and leukemias, as well as a variable degree of immunodeficiency. When present, the immunodeficiency may affect the humoral, cellular or both immune systems leading to recurrent bacterial sinopulmonary infections.(8)

The predisposition to recurrent sinopulmonary infections often leads to a higher exposure to radiation through X-ray exams in the evaluations of pneumonia or sinusitis. It is important, however, to be aware that this higher exposure to radiation may be directly related to a higher incidence of malignancies.

Cancer is up to two times more frequent in AT patients than in the general population, with leukemia and lymphoma being particularly common. Even ATM-gene heterozygote mutations carriers may be at significantly increased risk for breast cancers (up to eight percent of all cases of breast cancers in the United States).(1-9) Furthermore, since patients with AT are hypersensitive to ionizing radiation, they may be, as well, hypersensitive to radiomimetic drugs and be at risk of unexpectedly severe toxic reactions to radiation or chemotherapy. (9)

Conclusion

We presented a typical case of AT with classical clinical, laboratory and neuroradiological presentation. The knowledge of this condition is of high importance for any physician due to its high incidence and variable clinical presentation, and especially due to its clinical implications over several medical specialties.

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	A-T	ATLD	AOA 1	AOA 2	AT-WM
	< 5 Years old	± 2 years old	± 7 years old	± 15 years old	± 5 years old
Cerebellar ataxia	+	+	+	+	+
Oculomotor apraxia	+	+	+	+	+
Chorea / dystonia	+	+	+	+	+
Peripheral neuropathy	+	+	+	+	-
Telangiectasia	+	-	-	-	+
Recurrent upper respiratory infections	+	-	-	-	-
Radiation sensitivity	+	-	-	-	-
Malignancy	+	Unknown	-	-	Unknown
Elevated AFP	+	-	-	+	-
Immunoglobulin deficiency	+	-	-	-	-
Hypoalbuminemia	-	-	+	-	-
Causative gene	ATM	MRE11	APTX	SETX	Unknown

Table 1: Clinical and biological patterns of ataxia with oculomotor apraxia disorders (adapted from Liu W et al.)(6)

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