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From the Editor

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The year is at an end and the editorial board and the production team wish all the readers a happy end of year holiday and happy new year. As usual this issue is rich with various papers from the region. A cross sectional survey from Qatar looked at Primary care physicians’ knowledge, attitude, and practice toward obesity management. The author estimated that in Qatar, about 29.3% of females and 17.4% of males are obese. More than two thirds of physicians agreed that primary care physicians have a major role in obesity management. The authors concluded that knowledge gaps and ambivalent attitudes toward obesity management are common.

A paper from Iran looked at supporting services and quality of life in people with multiple sclerosis. Sixty files were reviewed. There is a significant relationship between supportive services and these items: Promotion of somatic health, decrease in somatic/ emotional limitations in performance of the role, increase in psychological health, fatigue decline, increase in sense of health, optimization of cognitive and social performance, decrease in anxiety regarding health, improvement in health conditions and promotion of life style from the patients’ point of view. There is no significant relationship between supportive services and increase in sexual performance of patients and pleasure from their sexual performance. The authors concluded that according to the results of this study some procedures and activities can be used for increasing supportive services levels in MS patients who need these services in order to promote their quality of life.

A paper from Jordan looked at Otological manifestations among patients with cleft palate. The authors noted that patients with cleft palate are more prone to have hearing loss than normal individuals and this decrease in hearing is secondary to eutachian tube (ET) dysfunction. The dysfunction in ET function is due to an abnormal insertion of levator veli palatini and tensor veli palatini muscles into the posterior margin of the hard palate and the palatal aponeurosis.

The first part of a series of papers from Iran looked at issues whereby data visualisation is the first step in data analyses, which help to disclose complex structure within data. The chief aim of the present article, which is the first article in a series of two, is to discuss the pros and cons of two ways of data visualisation i.e. box plot and map using a real public health data example.

A paper from Jordan looked at early performance of imaging studies after the first urinary tract infection. The authors looked at the yield and potential risks/benefits of early compared to late performance imaging studies such as renal ultrasonogram (RUS) and if needed, voiding cystourethrogram (VCUG) after UTI.

The authors concluded that performing RUS early does not influence the detection rate, severity of mild to moderate renal pelvic dilatation, or risk of secondary infection; it shortens the period of prophylactic use and increases performance rate of VCUG, thereby minimizing the risk of failure to detect VUR. The traditional recommendation of performing VCUG 3-6 weeks after the diagnosis of UTI should be re-evaluated.

Health care professionals including family physicians increasingly become involved in public health data analyses.
ABSTRACT

BACKGROUND: In Qatar, about 29.3% of females and 17.4% of males are obese. The primary care physicians have been identified as cost-effective contributors to treatment and prevention of obesity, because of high patient contact rates and the perceived credibility by the public. OBJECTIVE: This study aims to assess primary care physicians’ knowledge, attitude, and practice related to obesity management in Qatar.

METHODS: A cross-sectional survey of a randomly selected sample of 136 physicians was conducted, to which 118 questionnaires were returned (response rate of 86.7%). The included measures were sources of knowledge, attitudes to obesity and weight management, views regarding the prescription of weight lowering drugs and approaches to achieve weight loss.

RESULTS: More than two thirds of physicians agreed that primary care physicians have a major role in obesity management. On the other hand, only one third considered that they are professionally well prepared to manage obesity. Approximately 66% had negative attitudes toward obese patients. Most physicians reported that they routinely offer advice to their obese patients regarding weight reduction as apart of chronic diseases management. However, they rarely prescribe medications or screen their patients for obesity. Finally only 13.6% of physicians have received training in obesity management.

CONCLUSIONS: Knowledge gaps and ambivalent attitudes toward obesity management were found. More well-structured education focusing on obesity from prevention to management, seems warranted. This education should continue from medical school to post-graduate level.

Primary Care Physicians’ Knowledge, Attitude, and Practice Toward Obesity Management in Qatar

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Keywords: primary care physician; weight management; obesity; Qatar.

Introduction

The World Health Organization (WHO), despite its historical focus on malnutrition, has for the first time recognized the problem of obesity. The organization called for urgent action to combat the growing epidemic of obesity, which now affects developing and developed countries alike. In 2000, there were an estimated 300 million obese adults worldwide. In developing countries, it is estimated that over 115 million people suffer from obesity-related problems and a rapid increase in childhood obesity has also been reported.

In general, obesity is associated with a greater risk of disability and/or premature death due to type 2 diabetes mellitus, cardiovascular diseases such as hypertension, stroke and coronary heart disease, gall bladder disease, certain cancers (endometrial, breast, prostate, colon) and non-fatal conditions such as gout, respiratory conditions, gastro-esophageal reflux disease, osteoarthritis and infertility. Obesity also carries serious implications for psychosocial health, mainly due to societal prejudice against fatness.

Most health organizations recommend that physicians assess their patients for overweight, develop weight management plans tailored to patient’s needs including referring patients to ancillary personnel when appropriate, providing monitoring, support and encouragement. Moreover, patients should receive appropriate counseling about safe weight management and the benefits of lifestyle modification (physical activity and healthy diet).

Because of high patient contact rates and the perceived credibility of physicians by the public, primary care physicians have been identified as an important and cost-effective contributor to treatment and prevention of overweight and obesity by counseling their obese patients and promoting healthy lifestyle. However, it has been documented that many obese and overweight patients receive no advice on weight loss during primary care visits.

In Qatar, prevalence of obesity and overweight are increasing in both adults and children. WHO estimates that 29.3% of females and 17.4% of males are obese. Moreover, a Qatari study showed that the prevalence of overweight and obesity was 28.6%, and 7.9%, respectively, among adolescent boys and 18.9%, and 4.7% among girls. In primary health care centers in Qatar, most of the obese patients are presenting with common preventable co-morbidities e.g. Diabetes Mellitus, Hypertension, Dyslipidemia and Osteoarthritis. Obesity management can prevent...
testing knowledge about health risk of obesity, diagnosis, lifestyle (nutrition, physical exercise) and source of knowledge.

Answers were categorized into (Yes, No, I don’t know). Attitudes associated with obesity, obese patients, effectiveness of obesity management and role of physician was tested with 7 statements where the answers were categorized into (agree, neutral, disagree). Practicing obesity management in the last 3 months was clarified with 8 statements about diagnosis, advice, management (part of comorbidity management or prevention), referral and receiving training. Answers were categorized into (always, sometimes, rarely, and not at all). Data were coded and entered into Statistical Package of Social Science, version 13.00 for windows (SPSS-13).

Results

Knowledge

Of the 136 questionnaires distributed, 118 were returned; representing a response rate of 86.7%. Table 1 presents the profile of GPs who participated in the survey. Mean age was 42.2 years (SD 7.2, range 30-59). Sixty-four physicians were females (54.2 %) and 54 (45.8%) were males. Among these categories, only 28% were Qatari and 39 % were family board certified physicians. Regarding experience in clinical practice, 28 % had less than ten years and 26.3 % had more than 20 years. Only 16 participants (13.6%) have received training in obesity management.

Table 2 presents participants’ knowledge regarding obesity and its management. About 88 of the respondents (74.6%) were aware of the correct definition of obesity, BMI >30 kg/m2 and 88 (74.6%) correctly identified abdominal obesity as waist circumference >102 cm for males and >89 cm for females. Regarding diseases associated with obesity, about 55.9% and 47.4% of physicians were aware that obesity is associated with colon and endometrial cancer respectively. While 51.7 % knew that it is associated with Breast cancer, and 61.8% were aware that obesity is associated with osteoarthritis.

In terms of factors contributing to obesity, 86.4% of participants identified hormonal abnormalities as a determinant for obesity. Whereas, 71.1% identified genetic factors and 70.3% psychological status, as predisposing factors for obesity. Only 50.8% knew that low socioeconomic status is one of the determinants for obesity.

Regarding knowledge about obesity management, three quarters of participating physicians (75.4%) were aware that overweight patients should be encouraged to reduce their weight. However, only 22% of them were aware that weight reduction medication is indicated if overweight patients failed to reduce more than 10% of their weight after three months of supervised dietary and physical activity program in the absence of any other risk factors for cardiovascular disease. On the other hand less than a third of them (29.6%) were aware that a diet for weight loss should be high in carbohydrate and low in fat.

Attitudes to overweight and obesity management

Regarding attitudes toward obesity and obese patients, almost three quarters (74.6%) of physicians regarded obesity as a disease and (66.9%) considered overweight and obese patients lazier than normal weight people. Moreover, (64.4) % of them thought that overweight people lack willpower and motivation to reduce weight, as shown in Table 3.

More than two thirds of physicians (66.9%) agreed that the role of the primary care physician is not only to refer obese patients to other specialized care. More than half of the physicians (54.2%) regarded obesity management as professionally gratifying. However, only one third of them (33.9%) considered that they are professionally well prepared to manage obesity, and (66.9%) acknowledged that counseling in weight reduction is not easy.

Practice

Table 4 summarizes physician’s approach to weight management. The majority of the physicians gave their patients advice on dietary habits (82.2%) and physical activity (80.5%). The majority of them (83.9%) offer
weight control advice for patients with chronic illness e.g. DM or Dyslipidemia as part of their management.

Only seven participants (5.9%) stated that they prescribe drugs for weight management. Twenty-one physicians (17.8%) reported that they always refer their obese patients to others who specialized in obesity management. More than one quarter (28.8%) of the physicians stated that they always give their obese patient leaflets on weight reduction.

Regarding the usage of diagnostic methods for obesity; BMI was the most commonly used method by the physicians (67.8%), whereas (35.9% & 22.9%) always measure waist circumference and waist hip ratio respectively.

**Discussion**

This study examined the knowledge, attitude, and practice in obesity management among primary care physicians. As such, this study provides valuable information about current obesity management at primary care level in Qatar.

The present results indicated deficiency in knowledge regarding obesity, especially at a basic knowledge level like the definition, predisposing factors and comorbidity. Nearly 25% of physicians were not aware of the widely used definitions of obesity.

We found that many primary care physicians were not aware of some diseases that are associated with obesity like osteoarthritis, colon and breast cancer; as well as the predisposing factors for obesity. This deficiency in knowledge reported by this study agreed with several studies that have shown that GPs knowledge about management of obesity is incomplete and thus express the need for clinical guidelines and supplementary training in obesity management as a part of residency and continuous medical education training.14–17

Health professionals too often hold negative or stereotypical attitudes toward their obese patients such as: 'obese patients lack self control, lack motivation and are lazy'.18–20 In this study almost two thirds of primary care physicians held theses negative attitudes toward obese people compared to less than one third of GPs in France.21

Although such attitudes seem less prevalent among health professionals than they were 30 years ago they are still held by 30% of GPs, internists, cardiologists and by a lower fraction of endocrinologists18,19,21,22 and their prevalence tends to increase with patient BMI.23,24 Another study found a relatively high rate of clear stigmatization and in some cases discrimination by health care professionals, which agreed with documented discrimination against obese individuals, especially in the fields of employment, education and health care.24

Such a negative attitude toward obese patients may impede GP and patient interaction and result in perceived helplessness for both parties.19,26,27 One of the probable explanations for this negative attitude is the low levels of knowledge and skills regarding obesity management.28

On the other hand our study has shown a positive attitude of physicians toward their role and effectiveness in managing obesity. Similar positive attitudes have been found among Kuwaiti, Australian, Israeli and French GPs. However, about two thirds of participants in this study addressed the issue of difficulty in managing obesity which is consistent with the findings in other studies.18,21,28,20

Similarly, a survey among Australian GPs revealed that most GPs considered practicing dietary and physical activity assessment and advice for overweight patients to be very important, although they acknowledged that such a role was least likely to be practiced because they have inadequate nutrition knowledge and obesity counseling skills.20,30 The importance of GPs in managing obesity is also recognized by patients, as patients’ surveys have shown that they hold similar positive attitudes toward GPs’ role in managing obesity.31

The study has shown that advice on dietary habits and physical exercise is the most common practice in obesity management among primary care physicians in Qatar. However the level of practice is lower than what has been reported in other research.18 For instance compared to 95% and 99% of GPs in Israel and United States are advising on physical activity as a part of managing obesity in their practice, only 80% of GPs in Qatar advising on physical activity.18,32 And compared to 97% of American GPs and 92% of German GPs advice on dietary change, about 82% of GPs in Qatar do this as a part of their obesity management practice.32,33 It is reported that some primary care physicians don’t discuss lifestyle issues with their patients due to a number of issues such as time constraints, fear of negative reactions, or lack of training.34,35

Consistent with findings of previous studies, GPs in Qatar tended to give advice to those who are obese and have obesity-related comorbidities such as type 2 diabetes, high cholesterol, or arthritis, as apart of their management for the chronic illness.14,36 It is well known that the physicians are more likely to provide weight control advice to their patients who had obesity-related comorbidities to patients who were overweight or obese and without risk factors.36,37 And such advice is associated with a greater likelihood of trying to lose weight.38

Our study revealed that only 5.9% of primary care physicians prescribe anti obesity drugs compared to 39% among Korean.39 This low percentage is also reported by Middle East countries, like Kuwait and Israel (3% & 4% respectively).18,20 The low prescribing level can be attributed to unavailability of these drugs in primary care, and the concerns about the potential adverse effects may outweigh the health benefits of weight reduction. In addition to that, several studies showed that GPs regarded promoting healthy lifestyle as more useful than those drugs in obesity management.28,40

In Qatar, obesity was mainly diagnosed by using BMI, which alone is not a sufficient predictor of risk of comorbidities. There is more and more evidence that waist circumference or the waist: hip ratios are useful indices.
of abdominal fat accumulation and a better correlation with ill health and risk of coronary heart disease.5,41,42

In conclusion, Primary Care physicians in Qatar felt that management of weight problems was one of their responsibilities. However, their knowledge about obesity management needs to be improved to affect their practice and attitude positively toward the obese individuals. This requires improvement in training of GPs in counseling their obese patients, and focusing on methods of giving dietary and physical activity advice regardless of the presence of comorbidities. Development of guidelines for obesity management in primary care is essential to help the GPs to practice obesity management on a standardized level.

References


Table 1 Sociodemographic characteristics of physicians who participated in the survey.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54</td>
<td>45.8</td>
</tr>
<tr>
<td>Female</td>
<td>64</td>
<td>54.2</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qatar</td>
<td>33</td>
<td>28</td>
</tr>
<tr>
<td>Non-Qatar</td>
<td>85</td>
<td>72</td>
</tr>
<tr>
<td>Years of experience in primary care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 10 years</td>
<td>33</td>
<td>28</td>
</tr>
<tr>
<td>11-20 years</td>
<td>54</td>
<td>45.7</td>
</tr>
<tr>
<td>&gt;20 years</td>
<td>31</td>
<td>26.3</td>
</tr>
<tr>
<td>Specialization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine certified physicians</td>
<td>46</td>
<td>39</td>
</tr>
<tr>
<td>Non Family Medicine physician</td>
<td>72</td>
<td>61</td>
</tr>
</tbody>
</table>

Table 2 Percentage of correct knowledge of primary care physicians toward obesity

<table>
<thead>
<tr>
<th>Statement</th>
<th>Family Physicians</th>
<th>Non Family Physicians</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Physicians</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Obesity defined as BMI &gt; 30</td>
<td>34(73.9)</td>
<td>54 (75.0)</td>
<td>88 (74.6)</td>
</tr>
<tr>
<td>Waist circumference measurements greater than 102 cm in men &amp; 89 cm in women indicate an increased risk of obesity-related comorbidities.</td>
<td>37 (80.4)</td>
<td>47 (70.8)</td>
<td>88 (74.6)</td>
</tr>
<tr>
<td>Weight reduction medication is indicated when BMI is less than 30 even in the absence of cardiovascular risk factors</td>
<td>8 (17.4)</td>
<td>18 (27.8)</td>
<td>26 (22)</td>
</tr>
</tbody>
</table>

Diseases that associated with obesity

<table>
<thead>
<tr>
<th>Condition</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Colon cancer</td>
<td>23(50.0)</td>
</tr>
<tr>
<td>b) Endometrial cancer</td>
<td>25(54.3)</td>
</tr>
<tr>
<td>c) Breast cancer</td>
<td>20(43.5)</td>
</tr>
<tr>
<td>d) Osteoarthritis</td>
<td>24(52.2)</td>
</tr>
</tbody>
</table>
A diet for weight loss should be high in carbohydrates and low in fat.

People with BMI ≥ 27 should be encouraged to lose weight.

Table 3 Attitude of primary care physicians towards obesity management

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree in %</th>
<th>Neutral</th>
<th>Disagree in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity is a disease</td>
<td>88(74.6)</td>
<td>11(9.3)</td>
<td>19(16.1)</td>
</tr>
<tr>
<td>Overweight people tend to be lazier than the normal weight people.</td>
<td>79(66.9)</td>
<td>17(14.4)</td>
<td>22(18.6)</td>
</tr>
<tr>
<td>Overweight people lack will power and motivation in comparison with normal-weight people.</td>
<td>76(64.4)</td>
<td>17(14.4)</td>
<td>25(21.2)</td>
</tr>
<tr>
<td>Counseling in weight reduction is easy</td>
<td>19(16.1)</td>
<td>20(16.9)</td>
<td>79(66.9)</td>
</tr>
<tr>
<td>GPs’ role is to refer overweight and obese patients to other professionals rather than attempt to treat them.</td>
<td>29(24.6)</td>
<td>10(8.5)</td>
<td>79(66.9)</td>
</tr>
<tr>
<td>I am professionally well prepared to treat patients who are obese.</td>
<td>40(33.9)</td>
<td>48(39.8)</td>
<td>23(27.1)</td>
</tr>
<tr>
<td>For overweight and obese people even small weight loss can produce health benefit.</td>
<td>94(79.7)</td>
<td>13(11.0)</td>
<td>11(9.3)</td>
</tr>
<tr>
<td>GP should be a model and maintain normal weight.</td>
<td>84(71.2)</td>
<td>20(16.9)</td>
<td>14(11.9)</td>
</tr>
<tr>
<td>Treating overweight and obese people is professionally gratifying.</td>
<td>64(54.2)</td>
<td>28(23.7)</td>
<td>26(23.0)</td>
</tr>
<tr>
<td>Only a small percentage of overweight and obese people can lose weight and maintain this loss.</td>
<td>65(55.1)</td>
<td>22(18.6)</td>
<td>31(26.3)</td>
</tr>
</tbody>
</table>

Table 4 Practice of obesity management among primary care physicians in Qatar

<table>
<thead>
<tr>
<th>Statement</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you advise your patients to do physical exercise as part of a weight reduction scheme?</td>
<td>95(80.5)</td>
<td>11(9.3)</td>
<td>7(5.9)</td>
<td>5(4.2)</td>
</tr>
<tr>
<td>Do you advise your patients to do dietary change as part of a weight reduction scheme?</td>
<td>97(82.2)</td>
<td>10(8.5)</td>
<td>7(5.9)</td>
<td>4(3.4)</td>
</tr>
<tr>
<td>Diagnostic tools for overweight or obesity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Weight without height:</td>
<td>40(33.9)</td>
<td>27(22.9)</td>
<td>17(14.4)</td>
<td>34(28.8)</td>
</tr>
<tr>
<td>b) BMI:</td>
<td>80(67.8)</td>
<td>20(16.9)</td>
<td>9(7.6)</td>
<td>9(7.6)</td>
</tr>
<tr>
<td>c) Waist circumference:</td>
<td>42(35.6)</td>
<td>19(16.1)</td>
<td>24(20.3)</td>
<td>33(28.0)</td>
</tr>
</tbody>
</table>
Early Performance of Imaging Studies After First Urinary Tract Infection


*Pediatrician from department of pediatric RMS, at Prince Hashim Hospital Zarqa-Jordan.

**ABSTRACT**

Background: Guidelines recommend obtaining a renal ultrasonogram (RUS) for young children after a first urinary tract infection (UTI).

Objectives: To investigate the yield and potential risks/benefits of early, compared to late performance imaging studies as renal ultrasonogram (RUS) and if there is need for a voiding cistourethrogram (VCUG) after UTI.

Methods: We conducted a prospective study of 84 previously healthy children < 5 years old admitted from April 2006 to July 2007 with first documented UTI. We then divided the 78 patients who had (RUS) into two groups and compared them to a control group: group A - 49 children in whom RUS was performed within 2 days, group B - 29 children in whom RUS was performed > 2 days after UTI, and a historical control group C - 82 children in whom RUS was performed > 2 weeks following UTI.

Results: RUS was performed in 48/48 (100%), 6/35 patients (17.1%) and 34/116 patients (29.3%), and mild to moderate renal pelvic dilatation on RUS suggesting VUR was demonstrated in 38.8%, 37.9% and 39% in groups A, B and C respectively. No significant difference was found between these groups in terms of incidence ultrasound findings and positive results for voiding cistourethrogram (VCUG), and severity and grading of reflux within each group. One case of UTI secondary to VCUG occurred in a patient in whom the procedure was performed 4 months after the diagnosis.

Conclusions: Performing RUS early does not influence the detection rate, or severity of mild to moderate renal pelvic dilatation, or risk of secondary infection; it shortens the period of prophylactic use and increases performance rate of VCUG, thereby minimizing the risk of failure to detect VUR. The traditional recommendation of performing VCUG 3-6 weeks after the diagnosis of UTI should be re-evaluated.

Abbreviations: RUS, renal ultrasonogram; UTI, urinary tract infection; VCUG, voiding cistourethrogram; VUR, vesicourethral reflux.

**Introduction**

The main goals of imaging studies in children with a first episode of urinary tract infection (UTI) are to identify urinary tract anatomic abnormalities. If such abnormalities are found, therapeutic measures are executed in order to prevent future infections and possible long term damage to the kidneys.

Currently, the recommended imaging study is renal ultrasound (RUS), which mainly detects abnormalities in the upper urinary tract such as hydrenephrosis or obstruction. Furthermore, radiologists often report various degrees of dilatation of the collecting system of the kidney and urinary tract on renal ultrasound, suggesting that further investigation for VUR should be done. The standard test used to diagnose VUR is voiding cistourethrogram. The generally accepted practice is to perform VCUG in all children younger than 5 years old with first documented UTI. For children older than 5, the recommendations vary according to gender, clinical manifestations and family history of VUR. The accepted practice has been to perform VCUG at least 3-6 weeks after a UTI in order to prevent false positive results, which may be caused by UTI-related transient changes in the urinary tract. However, the validity of this practice has recently been questioned. Two recent retrospective studies and one cross-sectional analysis have shown that the prevalence and severity of VUR in children with UTI were not influenced by the timing of VCUG performance (i.e., early vs. late performance following the diagnosis of UTI). In a study investigating the optimal timing of voiding cistourethrogram (VCUG) after UTI, only 48% of patients had their scheduled VCUG performed. This may be related to the invasive nature of the VCUG, which requires urethral catheterisation. Furthermore, parents and physicians may be reassured by a normal ultrasound, and forgo performing the VCUG. The objective of this study was to determine whether the presence of a dilated collecting system of the kidney and urinary tract, as reported by radiologists, predicted the presence of VUR on VCUG.

The purpose of this study was to prospectively evaluate the prevalence and grade of VUR in children with first documented UTI in whom RUS was performed early (within 2 days) after the diagnosis of UTI, to evaluate whether early detection of mild to moderate renal pelvic dilatation suggests VUR and VCUG performance poses an increased risk for UTI, and to examine whether early performance of RUS and VCUG improves the likelihood of having this study performed.

**Patients and Methods**

We prospectively evaluated children of both genders under the age of 5 years who were hospitalized over a 14 month period (April 2006 to July 2007) with first documented UTI at Prince Hashim Hospital in Zarqa city. This central care hospital serves a population of approximately half a million children of various ethnic origins in eastern of capital (Amman-Jordan).

Urinary tract infection was diagnosed when a symptomatic child had a
culture of a urine specimen obtained by suprapubic aspiration growing any number of colonies, a catheterized specimen growing > 104 colonies/ml, or a properly obtained, clean-voided, midstream urine specimen growing = 105 colonies/ml. Patients with a previous history of UTI, known VUR or other genitourinary anomalies were excluded from the study.

The original study design was to perform RUS within 2 days from the diagnosis of UTI in all patients who met the study’s inclusion criteria, and in whom parental consent was obtained.

In fact, the study group was divided into two subgroups based on the timing of RUS: an “early group” (group A) in which RUS was performed within 2 days from the occurrence of UTI, and a “late group” (group B) in which RUS was performed later than 2 days from the diagnosis of UTI (due to delays caused by parents, primary care physicians, or the health management organization). RUS results of groups A and B were compared with the results of this procedure in a historical control group (group C), which included children with first documented UTI who were hospitalized at Prince Hashim Hospital between June 2004 and May 2005 and in whom RUS was performed more than 2 weeks after the diagnosis of UTI. The data on this group were collected retrospectively (RUS results) and prospectively (clinical data).

Patients in study groups A and B who had voiding cystourethrography given oral antibiotic prophylactically one day before and three days after procedures to prevent VCG- associated sequelae such as fever, chills or other evidence of UTI.

**Results**

During the study, 84 children under the age of 5 years with first documented UTI who met the inclusion criteria of the study were admitted to Prince Hashim Hospital. RUS then VCUG was performed in 78 patients who were divided into two subgroups. Group A comprised patients in whom RUS was performed within 2 days from the diagnosis (mean 1.5 days, range 1-2 days).

Group B comprised patients in whom RUS was performed more than 2 days after the diagnosis of UTI (mean 6 days, range 2-10 days). In 6 of 84 patients (7.1%) who were supposed to be included in the original group B, RUS was not performed. In five cases, the parents refused to expose the child to other procedure VCUG and one patient was lost to follow-up. RUS and VCUG was performed in all 49 patients who belonged to original group A. In 6/35 patients (17.1%) who belonged to original group B the procedure was not performed.

Group C comprised a historical control group of children in whom RUS was performed > 2 weeks from the diagnosis [Table 1]. In 34 of 116 patients (29.3%) who were supposed to be included in the original group C, the procedure was not performed. No statistically significant differences in gender and age were observed between the three study groups [Table 1].

**Table 1**

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tables 2, and 3 summarize the rates and grades of VUR within the three study groups. No statistically significant differences were found between groups A and B in terms of rate and severity of reflux. The findings in both study groups were compared to those in the historical control group (group C) in which RUS and VCUG was performed more than 2 weeks after the diagnosis of UTI. No statistically significant differences were found between this group and group A in terms of rate and severity of renal pelvic dilatation. The overall rate of VUR in all patients in group A, B and C combined was 38.5% (30/78).

Early performance of RUS followed by VCUG was safe. Mild sequelae included: a) occurrence of fever without evidence of UTI in two patients in group A (1 and 4 days following the procedure, respectively, and b) the development of UTI caused by Pseudomonas aeruginosa in one patient in group B following a VCUG performed 2 months after the initial UTI.

**Discussion**

For a first episode UTI in infants, renal ultrasound is performed to rule out anatomic abnormalities of the urinary tract. It is a non-invasive form of imaging performed before the VCUG and after the initial infection. Various degrees of dilatation of the collecting system of the kidney seen on renal ultrasound are often reported. A Medline search, however, found only three studies that examined the significance of these findings in children. Davie and colleagues9 looked at older children (mean age 4.2 years) who were referred for renal ultrasound and VCUG for a variety of indications, including UTI. They found that the frequency of VUR in children with mild renal pelvic distension did not differ significantly from that in children with no distension on renal ultrasound (39% v 32%, p = 0.365). Blane and colleagues10 retrospectively analysed VCUG and ultrasound results of 493 children. All children who had a VCUG within eight hours of a renal ultrasound scan were included, except for children with myelomeningocele or renal surgery. The mean age of their study population was 4.9 years. They found that ultrasound was not sensitive for VUR. Of the kidneys with VUR, 74% had normal ultrasound scans.

DiPietro and colleagues11 found that ultrasound was unreliable in excluding VUR in children aged 5 years or older who were being evaluated for a UTI. Only two of 21 children with VUR on VCUG had abnormal renal ultrasound scans.

In our study we prospectively evaluated VCUG findings in children with first documented UTI in our institution. The original design of our study was to perform VCUG within 2 days from the diagnosis of UTI in all children studied and to compare these findings with those of a historical control study group. Nevertheless, in 29 of the 84 children enrolled in the study early VCUG was not performed for various reasons (see Results). Those children in whom VCUG was performed more than 2 days after the diagnosis of UTI constituted a prospective control group, which, together with the historical control group, served to underscore the meaningful findings of this study.

McDonald et al.6 showed in their retrospective study that in 50% of children in whom VCUG was not performed early, the procedure was
not performed at all. In our prospective study, 17% of patients in the original group B (the “late group”) and 29.3% of patients in the original group C (the historical control group) did not undergo the study. Based on these findings we conclude that postponing the performance of RUS followed by VCUG reduces the likelihood of performing the procedure.

The question whether VCUG should be performed during the initial hospitalization in a child with documented UTI, while receiving the initial antibiotic therapy and following an appropriate clinical response, remains open. The medical and financial implications of such a practice should be investigated.

McDonald and co-workers showed that there was no difference in the rate and grade of reflux between children in whom VCUG was performed early (within 7 days from the diagnosis of UTI) and children who had VCUG later. In another study, Mahant et al. showed that performing an early VCUG did not influence the rate of detected reflux. It should be noted, however, that both studies were conducted retrospectively.

**Conclusion**

Renal ultrasound findings are neither sensitive nor specific for VUR in children with a first UTI. We conclude that early performance of VCUG (within 2 days) after first documented UTI does not influence the rate or severity of the detected VUR, does not augment the risk of secondary infection, shortens the period during which prophylactic antibiotic therapy is given, and increases the rate performance of the procedure, thereby minimizing the risk of failure to detect VUR. The traditional recommendation of performing VCUG 3-6 weeks after the diagnosis of UTI should be reassessed.

### Table 1. Finding characteristics of children with urinary tract infection

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RUS&lt; 2 days N=49</td>
<td>RUS &gt; 2 days N=35</td>
<td>RUS &gt; 2 wks N=116</td>
</tr>
<tr>
<td>Female</td>
<td>14 (28.6%)</td>
<td>5 (14.3%)</td>
<td>29 (25%)</td>
</tr>
<tr>
<td>Male</td>
<td>30 (65.7%)</td>
<td>87 (75%)</td>
<td>82 (70.7%)</td>
</tr>
</tbody>
</table>

Age (mos) 1–60 0.33–48 0.25–60
Mean ± SD 14.5 ± 16.3 17.7 ± 13.6 14.7 ± 14.5

**n = number of children**

* Not significant vs. groups B and C

### Table 2. Rates of renal pelvic dilatation and VUR in children with urinary tract infection

<table>
<thead>
<tr>
<th>Children who had RUS</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RUS&lt; 2 days N=49</td>
<td>RUS &gt; 2 days N=35</td>
<td>RUS &gt; 2 wks N=116</td>
</tr>
<tr>
<td>Normal RUS</td>
<td>30 (61.2%)</td>
<td>18 (62.1%)</td>
<td>50 (61%)</td>
</tr>
<tr>
<td>Renal pelvic dilatation with Reflux by VCUG</td>
<td>19 (38.8%)</td>
<td>11 (37.9%)</td>
<td>32 (39%)</td>
</tr>
</tbody>
</table>

**n = number of children**

* Not significant vs. groups B and C

### Table 3. Grades of VUR in children with urinary tract infection

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCUG &lt; 2 days N=30</td>
<td>VCUG &gt; 2 days N=13</td>
<td>VCUG &gt;2wks N=51</td>
</tr>
<tr>
<td>Grade 1</td>
<td>3 (10%)*</td>
<td>2 (15.4%)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>10 (33.3%)*</td>
<td>5 (38.4%)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>10 (33.3%)*</td>
<td>3 (23.1%)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>6 (20%)*</td>
<td>3 (23.1%)</td>
</tr>
<tr>
<td>Grade 5</td>
<td>1 (3.3%)*</td>
<td>0</td>
</tr>
</tbody>
</table>

**N = number of kidney units**

* Not significant vs. groups B and C

### References

ABSTRACT

Background and aim: Multiple Sclerosis is one of the most common non-traumatic and weakening diseases of the CNS, which causes many somatic, psychic and social problems; and mainly has an unpleasant effect on different aspects of the patient’s and their families’ quality of life. This study has been performed for evaluating the relationship between supporting services and different aspects of life quality in MS patients in Tehran city.

Methods and materials: This study was a coherence type and done by simple random sampling from active existing files in Iranian MS association and Sina MS Super-specialist clinic. Among these, 60 files were selected. By estimating sample volume in coherence research, sample volume was determined. Life style was evaluated by a standard questionnaire containing 54 questions (MSQOL-54) and for evaluation of the type and quality of supportive services the researcher’s questionnaire used 46 questions. The relationship among variables was assessed by statistical test of Spearman correlation coefficient.

Findings: There is significant relationship between supportive services and these items: Promotion of somatic health, decrease in somatic/emotional limitations in performance of the role, increase in psychological health, fatigue decline, decrease in somatic/emotional limitations in performance of the role, increase in health sense, optimization of cognitive and social performance, decrease in anxiety regarding health, improvement in health condition and promotion of life style from the patients’ point of view. There is no significant relationship between supportive services and increase in sexual performance of patients and pleasure from their sexual performance.

Conclusion: According to the results of this study some procedures and activities can be used for increasing supportive service levels in MS patients who need these services in order to promote their quality of life.

Introduction

Disease is not a selective phenomenon but it is a fact that it is an unwanted accident. Frequently, it has an abrupt and unpredictable onset and affects the subject’s performance, method of life and his/her emotions. MS is a chronic disorder of the CNS with gradual deterioration. The type of clinical condition changes from benign to a rapidly growing form. It is usually seen with coming and going attacks. This disease is the most common reason for neurological illness in the young and adolescents. According to the disorder of the CNS, symptoms of this disease may involve different parts of the body and make patients significantly change their life way and their aims. In addition to producing somatic weakness, that is, they need special treatment activities, MS imposes many psychic, social and economic pressures on the patient and his/her family and due to fatigue and illness the patient depends on others which consequently leads to depression and lack of self-confidence. Sometimes there is a direct relation between degree of weakness and incidence of social and psychic problems in MS people. On the other hand, because Ms is usually seen at ages less than 40 years, it involves young, active and productive people and consequently causes loss not only in professional conditions of the patient but also endangers society in from an economical point of view. Among these, females are more involved in this disease and as a result it profoundly affect smatrimonial situations and education of children and hurts families as practical and productive units of society, and deteriorates the health of future generations. In chronic diseases, one of the most important aspects of the social, economic and treatment supports is to consider the quality of life of the patient. The importance of the quality of life in this kind of disease rises from these facts:

a) there is no treatment for this diseases. On the other hand with improvements in industrial and treatment aspects life time/duration of patients can be increased. MS is a chronic disease with unknown etiology and no exact treatment. Although the final and proposed aim is treatment of MS, until finding an exact treatment for that, it is very important to conserve and improve MS patients’ quality of life.

Ms International Federation (MSIF) introduces indices-as supportive services, Quality of Life, Multiple Sclerosis.

Conclusion: According to the results of this study some procedures and activities can be used for increasing supportive service levels in MS patients who need these services in order to promote their quality of life.

Supporting Services and Quality of Life in People with Multiple Sclerosis

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Key Words: Supportive Services, Quality of Life, Multiple Sclerosis.
optimization of existing buildings and residence areas in society for use by MS patient for an extended time’.


In this research, quality of life is divided into 14 indices, according to somatic and psychic dimensions; which are: somatic and psychic improvement, decrease of somatic and emotional limitation of the patient in performance of role, decrease in pain/fatigue and anxiety of the patient regarding his/her health, improvement of social/cognitive/health condition of the patient, sexual performance improvement and increase of patient’s pleasure from his/her sexual performance, and also improving of health feelings and increment of quality of life from the patient’s point of view.

Even if the disease process does not cease, with delivering optimal supportive services, incidence or progress of most of the symptoms of the disease can be decreased. Comfortable life can be provided, life quality can be increased and patients and their family can be helped in solving most of the problems and in compromising with the existing situation.

Although there is no exact statistic of the number of MS patients in Iran, primary estimations show that about 35 to 40 thousand MS patients live in Iran. The MS association of Iran have announced 30 thousand MS patients as an exact number of this disease.

Research shows that there is significant increase in the incidence rate of MS in recent years in Iran and the age of incidence has decreased.

So, with considering the ever increasing number of MS patients and the vast variety of symptoms and problems related to it and because research which has been done I on MS mostly pertains to medical treatment and less to social and psychic symptoms, and because of the lack of enough information about types and amount of supportive services with various aspects of patients’ quality of life, the researcher with the aim of evaluating supportive services and quality of life of MS patients has performed this study.

Materials and Methods

This research is of the coherence type and pertains to the study of the relationship between supportive services and MS patients’ quality of life. In this research among the active existing files of the at the MS association of Iran and Sina high professional (super-specialist) MS clinic, 60 files by simple random method were selected. For determining sample volume, establishing method for sample volume in coherence research has been used. Gathering research information was done via interview with patients and by standard questionnaire containing 54 questions about MS patients’ quality of life (MSQOL-54) and a researcher-designed questionnaire regarding supportive services. 14 indices of a patients’ quality of life were evaluated in two different aspects: somatic and psychic.

Supportive services questionnaire has two parts: part 1 for obtaining demographic characteristics and part 2 with 46 five-choice questions for assessing supportive services.

MSQOL-54 questionnaire has been normalized in Iran. Reliability of Researcher questionnaire was obtained with a) comparison of predetermined measuring criteria between this research and other research; a) consultation with other researchers and scientists who work on this issue and individuals who are familiar with that. Consultation with some teachers and instructors in social work, psychology and neurology fields with experience in MS disease and a doctor (MD) who has MS, and agreement of all of them regarding questionnaire content, confirmed reliability of the questionnaire. On the other hand, reliability of the questionnaire content was evaluated by a pre-test on 30 individuals in the study group, and accordingly some changes were made in the questions.

Sustainability of the mentioned questionnaire was verified after doing the pre-test and by calculation of a-Kronbach (a=0.87). Gathered information was analyzed by SPSS software. By use of descriptive statistics, demographic information and variables were described in graphics, frequency/absolute tables. Statistical test of Spearman correlation coefficient was used for assessing relationship among variables.

Findings: In this study, 73% of the sample were female and 27% male; among them 70% were married, 27% were single and 3% divorced. The biggest age frequency was between 26 to 35 years. 35% of study patients have university (graduate) degree, 32% have diploma (under graduate degree) and 33% have under diploma (secondary) education. The age in 55% of patients was 4 years and more, in 25% between 3 to 4 years and in 20% less than 3 years. In this research, relationship between supportive services and 14 indices of quality of life in somatic and psychic point of view, was assessed and there was no significant relationship between supportive services and 12 of these indices, but these indices have a significant relationship with supportive services.

There is a significant relationship among services and somatic health improvement, decrease in emotional and somatic limitation of patient in performance of role, pain decrement and increment of patient’s psychic health (Table 1). So, with increase of supportive service level providing for patients, somatic and psychic health is improved and amount of pain of patient and their somatic / emotional limitation in performance of role is decreased.

There is a significant relationship among supportive services and fatigue decrement, health sense increment, social / cognitive performance improvement and decline in anxiety of patients regarding his/her health (Table 2). This means that with introducing further supportive services to MS patients, the amount of his/her fatigue and anxiety regarding health is decreased, his/her feeling about health is increased and his/her social/ cognitive performance is improved.

There is a significant relationship among supportive services, and improvement of health condition and improvement in quality of life from
the patient’s point of view (Table 3). But there is no significant relationship between supportive services and variables of sexual performance improvement and increase of patient’s performance from his/her sexual performance. So, with increase of supportive services level, patient’s health condition and quality of life (from his/her point of view) is improved.

In this research the relationship between supportive services and somatic/psychic dimensions of quality of life have been evaluated separately (Table 4). With increment in supporter services level (delivery to MS patients), there is improvement in their somatic/psychic aspects of quality of life.

**Discussion**

Disease is an event which reduces quality of life.13 MS is a chronic disease with various and day-to-day changing signs and symptoms in different individuals.14 This research depicts that there is a significant relationship between supportive services and somatic/psychic aspects of quality of life of MS patients. As mentioned in this study there is a significant relationship between supportive services and all indices of quality of life except variables of sexual performance and patient’s pleasure of his/her sexual performance. Despite lack of presence of any study regarding relationship between supportive services and quality of life in MS patients, but with considering research in the same fields the following results can be elicited:

The findings of this research are consistent with this fact that by increment in supportive services delivered to MS patients their somatic/psychic health is improved and patients’ abilities for doing everyday activities are increased and they feel more pleasure, relax more and have more enjoyment than before.

In addition, these results show that with increment of supportive services, social/cognitive performance of patients is improved and they will be able to further participate in group work and activities and to have more proper relationships with family and friends and background people and also to increase their concentration and attention on long-term and thoughtful activities. Results of this study depict that self-care works and education/support programs have a significant effect on increment of scores of quality of life in MS patients in the fields of social/psychic/public health performance. These mentioned results are in agreement with the results of the present study.15

Significant relationships between supportive services and decrement in social/emotional limitations of MS patients in performance of their role, is another finding of this study. So if further supportive services will be delivered to patients, their problems in house and work place, due to their social and sensual condition, which results in limitation in performance of role, would be decreased. Southerland et al (2005) in a study in Australia under the title of “Method of relaxation and quality of life of MS patients: example for self-education” on 11 MS patients (control group) and 11 MS patients (without intervention as a control group) concluded that use of these services cause more acceptance of energy and less limitation in somatic/psychic activities.16 These results are in agreement with the present study.

Other findings of this research are consistent with this fact that increase in supportive services will decrease the amount of pain and fatigue of the patient and the patient will have more somatic abilities, more joy from his/her life and experience and less weakness. Results of one research project under the title of “Effect of education on method of self-care and amount of incidence of common problems in MS patients” shows that education (one of the supportive services indices in this research) is effective in causing improvement in self-care and decrement in fatigue and somatic pain of patients, which are one of the symptoms of MS disease.2 These results are in agreement with the results of this study.

Findings of this study show that there is a significant relationship between supportive services and health feelings and condition of patients and decrement in anxiety regarding their health. This means that with increase in supportive services, health condition of patients compromised previously will be increased and they feel more relaxation and less anxiety in this regard. In the study by di-Fabio et al in America (1997) (one group of patients with comprehensive rehabilitation services and one group without these services) value of these services in regard to improvement of quality of life in correspondence with patients’ health, were shown.17 These results are in agreement with the results of this present study.

In this research, also, relationship between supportive services and improvement of quality of life from the patient’s point of view is evaluated. According to these results, there is a direct relationship between them. As a result it can be deducted that with delivering more supportive services, how the patients feel about his/her life and his/her evaluation of quality of life will be better. According to Peres, quality of life, in fact, is a manifestation, and projection of the patient's life experiences on the base of an individual’s views.18 So, it is important to estimate the views and thought of the patient regarding his/her health condition.19 According to the study by Benedickt et al (2005) about the effect of different parameters regarding prediction of quality of life, it is seen that quality of life according to the patients view, is the most powerful predictor in quality of life of a MS patient.20

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Table 1: Correlation between supportive services and variables of improvement somatic health, decrease of somatic and emotional limitations in performance of role, pain decrement and psychic health improvement.

<table>
<thead>
<tr>
<th>Statistical Test</th>
<th>Psychic improvement</th>
<th>Pain decrement</th>
<th>Decrease of emotional limitation in performance of role</th>
<th>Decrease of somatic limitation in performance of role</th>
<th>Somatic improvement</th>
<th>Supportive services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation Coefficient</td>
<td>** 508/0</td>
<td>* 315/0</td>
<td>* 277/0</td>
<td>512**/0</td>
<td>282*/0</td>
<td></td>
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<tr>
<td>Significance Level</td>
<td>0/00</td>
<td>014/0</td>
<td>032/0</td>
<td>00/0</td>
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<td></td>
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<tr>
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</tr>
</tbody>
</table>

** * p<0.01 * p<0.05

Table (2): Correlation among supportive services and variables of fatigue decrement, increment of health sense, improvement of social cognitive performance and decrement in anxiety about health.

<table>
<thead>
<tr>
<th>Statistical Test</th>
<th>Decrease of anxiety</th>
<th>Improvement in cognitive performance</th>
<th>Improvement in social performance</th>
<th>Improvement in health feeling</th>
<th>Fatigue decrement</th>
<th>Supportive services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation Coefficient</td>
<td>** 392/0</td>
<td>* 276/0</td>
<td>* 359/0</td>
<td>* 305/0</td>
<td>** 465/0</td>
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<td>Significance Level</td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

** * p<0.01 * p<0.05

Table (3): Correlation among supportive services and variables of sexual performance improvement, health situation improvement, increment in pleasure of sexual performance and improvement in quality of life from the patient’s point of view.

<table>
<thead>
<tr>
<th>Statistical Test</th>
<th>Improvement in quality of life from patient’s point of view</th>
<th>Increase in pleasure from sexual performance</th>
<th>Improve in health condition</th>
<th>Improve in sexual performance</th>
<th>Supportive services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation Coefficient</td>
<td>* 271/0</td>
<td>268/0</td>
<td>* 289/0</td>
<td>179/0</td>
<td></td>
</tr>
<tr>
<td>Significance Level</td>
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<td>086/0</td>
<td>025/0</td>
<td>257/0</td>
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<tr>
<td>No</td>
<td>60</td>
<td>42</td>
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<td></td>
</tr>
</tbody>
</table>

* p<0.05

Table (4): Correlation between supportive services and somatic/psychic aspects of quality of life.

<table>
<thead>
<tr>
<th>Statistical Test</th>
<th>Psychic dimension of quality of life</th>
<th>Somatic dimension of quality of life</th>
<th>Supportive services</th>
</tr>
</thead>
<tbody>
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<td>504**/0</td>
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<tr>
<td>Significance Level</td>
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</tr>
<tr>
<td>No</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

** * p<0.01


Etemadifar M, No of MS-affected individuals in Iran country (www.sanimemorirs.com/archives/2006/09/2)

MS association of Iran: No of MS-affected individuals in Iran(www.irms.org)


HPV Vaccine Hype
The Gardasil; The Approved First World Cervical Vaccine

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Key words: HPV, genital HPV, Pap test, cervical cancer vaccine, Gardasil, HPV vaccine.

ABSTRACT

Cervical cancer is a common type of cancers that affects women worldwide. It is considered to be the second most seen cancer among women, and sometimes at younger ages it can be life-threatening. It is closely linked to HPV infection; especially HPV 16 and 18 strains which cause the lining of the cervix to change from normal to precancerous lesions, which if not detected and treated can change to cancer. Also HPV is associated with development of skin-coloured growths (genital warts). It is a very preventable disease due to the Pap screening test, which is still missing in developing countries sadly, and therefore many cases go undetected or present at a late stage whereby no further actions can be done. And this is considered a total tragic loss and waste of women.

This review article will highlight a simple, and general overview about HPV epidemiology, Pap screening in the era of HPV vaccination, and the proposed and approved Gardasil vaccine to combat cervical cancer in terms of effectiveness, tolerability, safety and pricing; and including Gardasil dosing, and administration, and its importance as a life-saving vaccine against cervical cancer. The vaccine is considered to be currently a great advancement for women’s health however there still remains unanswered questions.

Epidemiology

About 9710 women in the USA annually are diagnosed with cervical cancer according to the American Cancer Society (ACS, 2006). About 20 million cases are infected with HPV worldwide, out of which about 6 million are American and about 400,000 in the developing world itself, with about 290,000 dying of cervical cancer worldwide annually (Stella Heley, 2007). According to CDC (Center of Disease Control and prevention), it is estimated that by age 50, about 80% of women will have genital HPV infection.

Finland and Australia is well known to have the lowest cervical cancer rate in the world, due to the national screening program. Australia has the second lowest record in the world, by about 60%, since the introduction of the national screening program in 1991 About 700 women are diagnosed each year and about 240 die. This is due to either not having a Pap test in the past 10 years, or being inadequately screened, and around 75% were over 50. 80% of cervical cancers are caused by HPV 16 and 18.

HPV is responsible for 99.7% of cervical cancer, 90% of genital warts, 70% of anal cancer, 50% of penile cancer, and about 25% of oropharyngeal cancers (Anonymous, 2006, Abby Lippman, Ryan Melnychuk, et al, 2007, Jenny may, 2007). HPV is a DNA virus which exhibits about 200 different strains classified according to DNA sequences, and about 30 are known as Sexually Transmitted Viruses (Judy Norsigian; Alicia Priest; Robin Barnett, 2007, Jenny may, 2007, Stella heley, 2007), and 40% are anogenital strains with 15 high risk types (oncogenic); HPV 16, 18, 31 &45. HPV types 16 and 18 are considered to be of high potential risk (70%) for developing cervical cancer worldwide, and 50% high-grade lesions; especially high-grade squamous intra-epithelial cancer, and cervical intra-epithelial cancer, while HPV 31 and 45 cause 10% of the cancer, and affect both the male and female genital area (Joanna Breitstein, 2006, Cormac Sheridan, 2007, Maryann Napoli, 2007), whereas type 6, 2 and 11 are low risk and blamed for 90% of genital warts, with 10% low-grade cervical lesions (Jenny May, 2007, Chemist & Druggist, 2007, Stella Heley, 2007).

HPV is the commonest Sexually Transmitted Disease (STD) and is highly infectious with 50% transmission rate post exposure (Jenny may, 2007). It’s a common sexually transmitted disease , and it enters the skin through tiny micro-abrasions, where it remains confined to the surface epithelium, then enters the nucleus of the basal cell (Alicia Priest, 2006, Jenny May, 2007, Stella Heley, 2007). Then it relies on the replication of these cells, and its transformation, then exfoliation, and then spread. Via Pap smear those exfoliated cells are collected, and examined for certain features such as dense or double nucleus, or high nuclear-cytoplasmic ratio (Stella Heley, 2007). The immune cells cannot find it in order to fight it because HPV hides very well from the immune system. HPV is a very common infection in the first 10 years of establishing sexual activity. The first infection is sub-clinical, and what is called (common cold), and usually HPV infection clears within a year.
in about 70% (Judy Norsigian; Alicia Priest; Robin Barnett, 2007, Jenny May, 2007, Stella Heley, 2007). There is no actual test to trace the clearance rate nor to suggest developing the actual cancer (Alicia Priest, 2006). Every active sexual woman will has at least one HPV infection in her lifetime, and the infection resolves on its own so no-one can know if they are infected (Alicia Priest, 2006).

The WHO predicts a rise in mortality rate up to 25% over the next coming 10 years (Alicia Priest, 2006). The WHO is interested in including the vaccine in its essential medicine but the high costs, and the short supply remains a big obstacle. Also in the USA some conservative groups are opposed to making the vaccine a mandatory issue, and therefore their permission is needed for their girl's vaccination, as this will reflect a false message for safe sex, and encourage promiscuity (Maryann Napoli, 2007, Gill Jenkins, 2007). From the sex concept, the more partners a person has, the greater the HPV risk of infection (Alicia Priest, 2006).

HPV is a marker of sexual activity, and not everyone will develop cervical cancer. HPV is associated with poverty, poor nutrition, smoking, lack of education, low standard of living, all of which compromises the immune system and thus HPV persists and so cervix cancer can occur (Maryann Napoli, 2007, Judy Norsigian; Alicia Priest; Robin Barnett, 2007).

Pap test: Papanicolau, 1949/50.

Cervical cancer is 90% preventable with Pap screening and treatment. Therefore this brings up the necessity of a Pap test, which after its introduction has dropped the cervix cancer rate by 75%. It is a simple screening tool for cervical cancer. It is carried out routinely in some countries such as the UK, and not available yet in the developing countries where women are still dying of a preventable disease. The vaccine does not replace the routine cervical cancer screening Pap test (Judy Norsigian; Alicia Priest; Robin Barnett, 2007).

The cervical squamous changes occur at the squamo-columnar junction (Stella Heley, 2007). This area is vulnerable to infection by HPV (Stella Heley, 2007). So the Pap test is aimed at picking-up this area with the cellular changes (Stella Heley). The squamous changes can vary between low-grade squamous intraepithelial lesions, or high-grade squamous intraepithelial lesions (previously known as CIN).

The old CIN term can be treated, in order to prevent progression to squamous cell cervical cancer (Stella Heley, 2007). If the smear reveals atypical cells, or a low-grade lesion, the body will defend itself via the immune system (Judy Norsigian; Alicia Priest; Robin Barnett, 2007). But those women with high-grade lesions should be followed by further testing. The glandular changes smear (columnar epithelial cells at endocervical canal) should be referred for colposcopy by an expert gynaecologist oncologist. Removal of the abnormal cells prevent invasive cancer in 90% (Judy Norsigian; Alicia Priest; Robin Barnett, 2007, Jenny May, 2007).

Merck`s HPV Gardasil vaccine

This quadrivalent HPV recombinant vaccine (Gardasil), was developed to combat and prevent cervical, and precancerous genital warts by producing neutralizing antibodies which bind tightly to the virus surface and prevent its attack on host cells (Alicia Priest, 2006, Angie L.Goesser, 2007, Anonymous, 2007). The non-infectious vaccine is composed of highly purified virus like particles (Jenny may, 2007). It is a white cloudy liquid given by intramuscular injection in three stages as is the case with hepatitis vaccine (Monica R McLemore, 2006). It cannot be given to pregnant women, and is not recommended for lactating women though there is no documentation yet regarding its excretion in milk. It is recommended for girls and women between 9-26 years (Barbara Sibbald, 2006, Anonymous, 2006, Angie L. Goesser, 2007). It should be shaken well before given The first dose is given, then two months later after dose 1 another, and finally six months after dose 1, yet another, in either the deltoid or upper antero-lateral thigh area (Angie L. Goesser, 2007). It is not known yet if a booster shot is needed.

The vaccine can be given concurrently with hepatitis, tetanus, reduced diphtheria, acellular pertussis, and meningococcal vaccines but not in the same syringe, or the same injection sites (FDA, 2006, Monica R McLemore, 2006, Angie L. Goesser, 2007, Jenny May, 2007). If the vaccine series is interrupted for one reason or another, it should be continued without restarting the whole series (Angie L. Goesser, 2007). There is no need to assess the HPV status before vaccination (Angie L. Goesser, 2007). The single dose costs $147, and the three-dose series $441 (Alicia Priest, 2006, drugs and herbs, 2006, Anonymous, 2006, Angie L. Goesser, 2007, Stella Heley, 2007). Side effects reported are pain, swelling, erythema, fever, nausea, naso-pharyngitis, dizziness, diarrhea, vomiting, myalgia, toothache, respiratory tract infection, malaise, arthralgia, insomnia, and nasal congestion (Monica R McLemore, 2006, Angie L. Goesser, 2007, Jenny May, 2007). It has been manufactured by Merk and Co., and has been offered int two forms: single-dose vials (0.5 ml), or single-dose, pre-filled, luer lock syringes (0.5ml). This vaccine should be refrigerated at 36-46 F, and should not be frozen. The main purpose for the vaccine is to prevent and not treat or cure those who have already contracted the HPV virus already (Alicia Priest, 2006, Jenny May, 2007). Also the vaccine would not work against other types other than HPV 1, 11, 16, and 18 (Monica R McLemore, 2006). It is not known how long the vaccine will protect, but protective antibodies persisted for about four to five years (Marc Iskowitz, 2006, Angie L. Goesser, 2007).

In June 2006 the FDA (U.S. Food and Drug Administration) has approved the first vaccine (Gardasil) for preventing cervical cancer, and genital warts in females between 9-26 years based on clinical trials (Marc Iskowitz, 2006, Barbara Sibbald, 2006, Jenny May, 2007). The CDC (Centers for Disease Control and prevention) recommended vaccination of those
girls between 11-12 years of age before indulging in sexual activity, and it was added to the prevention vaccine program in 1 November 2006, and also it can be given to young females of 9-10 years before starting sexual activity (Angie L. Goeser, 2007, Jenny May, 2007). Catch-up vaccination is recommended for those who are 13 to 26 years (Angie L. Goeser, 2007). It is also advocated to vaccinate boys and young men between 9-15 years to prevent HPV infection with type 6, 11, 16 &18 but study on this is not yet completed, and maybe will be licensed later, plus the fact that men will be the natural community reservoir for HPV virus (Stella Heley, 2007, Meenakshi Dawar, Shelley Deeks, Simon Dobson, 2007, Gill Jenkins, 2007). The vaccine became available in Australia in August 2006. Australia is the 3rd country who have approved the vaccine after FDA in June 2006 (Stella Heley, 2007).

Also another new cervix bivalent cancer vaccine “Cervarix” has been launched in the UK in 2005, which is manufactured by GlaxoSmithKline (Natasha T Metzler, 2005). It has been estimated to be effective against two Human Papilloma virus; HPV 16 and 18, which are claimed to be the culprit for more than 70% of cervical cancer cases (Marc Siegel, 2006). This has been followed then by the vaccine “Gardasil” by Sanofi Pasteur MSD in the UK in 2006, which is effective against HPV 6, 11, 16 and 18 (Natasha T Metzler, 2005, Pauline Comeau, 2007). It is actually developed by Merck in New Jersey; at the Whitehouse station (Cormac Sheridan, 2007). It is still not approved finally by the UK NHS, however some private sectors provide it (Marc Siegel, 2006, Anonymous, 2007).

According to Merck and Co. (drug manufacturers), Gardasil is the perfect guard, as it carries promising results in short terms; it has been targeted against the two common types of HPV (16 & 18), which are the main culprit of cervical cancer and genital warts. The trials were carried out on about 25,000 patients between 16-23 years in about 33 countries and the trial is in its Phase III, and showed 100% effectiveness (Kathie Lynas, 2005, Marc Siegel, 2006). It should be borne in mind that this vaccine would not protect against other HPV strains (research highlights, www. nature.com/reviews/cancer, 2005). The vaccine will provide protection against HPV 6, 11, 16 & 18.

The Gardasil vaccine’s availability and implementation needs the work, the cooperation, and full engagement of stakeholders; whether media, opinion leaders, physicians, pharmacists, health workers, and the whole general populations to unleash the market for this vaccine. After all public health education campaign (safe sex, condom use, cervical cancer screening) is important rather than plugging in the vaccine without an explanation which will affect its acceptance from the public generally speaking (Abby Lippman, Ryan Melnychuk, et al, 2007).

Equally both Gardasil and Cervarix are extremely immunogenic; both induce high antibody titres that are many times higher than those induced by natural HPV infections, and this immunity lasts for about 5.5 years, (Meenakshi Dawar, Shelley Deeks, Simon Dobson, 2007).

The vaccination program should be built on tangible goals; for instance whether to eradicate the high-risk HPV types from the population, or to cut the death rate from cervical cancer, all of which need a different approach and strategy (Abby Lippman, Ryan Melnychuk, et al, 2007). In both cases thais implies considering vaccination of boys and young men in the former goal, and/ or directing Gardasil to all HPV types (broad ranges of oncogenic HPV) apart from considering the only two high-risk HPVs (16&18) in the latter goal (Abby Lippman, Ryan Melnychuk, et al, 2007).

The 9-13 years age group should be the priority target group for mass vaccination. vaccinated girls and women should still restrict themselves to safe sex practices, and consider the care program of Pap testing due to missing of effectiveness data regarding Gardasil, and it is still not confirmed yet how much the vaccine can add value, plus the fact that it only protects against some HPV types and not all (Anonymous, 2006, Abby Lippman, Ryan Melnychuk, et al, 2007). Finally there are still more questions than answers about HPV and Gardasil. Parents are now worried about the growing number of vaccines which are given to babies and young children.

Education of public

It is essential to educate the public about cervical cancer and hence to cut down its incidence when possible, by considering the following points:

• Address the importance of healthy personel and safer sexual practices.
• Regular Pap testing for women.
• Screen for STDs.
• Cessation of smoking.
• Uphold unbiased research for evidence-based policy, and health care decision-making.

Conclusion

In developed countries Pap smear is the sole mandatory tool, in order to rule out any affected case, but on the contrary in developing countries this is still missing, and many cases go unnoticed. It is vital to develop a national immunization strategy to make certain a complete and systematic appraisal of all relevant factors before decisions regarding the implementation of a new immunization program are made. Also in order to halt cervical cancer, we needs improved reproductive health practices and the widespread availability of publicly funded programs for Papanicolaou smear testing, with follow-up testing for suspicious lesions.

After all it is not clear how much Gardasil will add in this aim, and how safet it is; unfortunately if something new has been discovered, tested and found to be working well, that does not imply it is correct; as, for example the story about the drug failure; COX-2 (Vioxx); when Vioxx was discovered before 2003 and had been announced widely and been used by many globally, and sometime later on it was revealed that it caused serious cardiac risks, and then withdrawals from the market began.
in 2003. In that case there should be always a warning before anything new is released, and on what basis.

It’s also very important to consider the social and the cultural resistance in each country, and also to implement the vaccine before girls become sexually active, in order to save lives, especially in the developing countries. After considering the HPV strains, which are associated with cervical cancer development, and the fact that it can’t protect against other HPV strains, the vaccine will reduce, rather than eradicate HPV infection and this is the correct description for Gardasil. Based on this fact, and from this concept, therefore Gardasil cannot be proposed for every woman, because it is costly for the public health funds at this stage. Gardasil might prove to be a useful tool in the long run, after collecting enough data on its administration on girls, and ruling on its safety and effectiveness as well. Until then the Pap screening should be funded and developed for every women in all nations. Finally Pap screening remains the mandatory tools for preventing cervical cancer.

It is still not yet known how much the incidence of cervical cancer in the developing countries is due to the lack of a cervical cytology screening program, and thus many cases are lost without early diagnosis, and that is a big waste, and will contribute to the high mortality rate for a preventable killing disease of women. Therefore it is important to raise the issue with the decision makers, about the importance of Pap testing, in ruling out those affected cases and applying treatment at earlier stages. Gardasil cannot replace the requirement of Pap testing.

Also it is not clear yet if Gardasil will protect against other STDs, plus vaginal and vulvar cancers, and if young men were vaccinated, to cut down the incidence of HPV infection rate, as men are the only reservoir for HPV. Also not known yet is if a booster dose of Gardasil is needed or not as a matter of fact for its effectiveness which will last from 4 to 5 years according to the trials finding.

Lastly it is mandatory to raise public health awareness and education about safe sex, practice, and safety by changing behaviours, and applying a new studied strategy to promote the better reproduction health of the community, by targeting younger age groups with an education mass media campaign which is the cornerstone for any primary health care.

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Table 1: Difference between both vaccines; Gardasil and Cervarix ((Meenakshi Dawar, Shelley Deeks, Simon Dobson, 2007)).

<table>
<thead>
<tr>
<th>Name</th>
<th>Gardasil</th>
<th>Cervarix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>Merck Frosst Canada Ltd.</td>
<td>GlaxoSmithKline Inc.</td>
</tr>
<tr>
<td>Type</td>
<td>Prophylactic vaccine consisting of virus-like particles containing L1 capsid proteins</td>
<td>Prophylactic vaccine consisting of virus-like particles containing L1 capsid proteins</td>
</tr>
<tr>
<td>Antigens</td>
<td>Quadrivalent vaccine: HPV types 6, 11, 16 and 18</td>
<td>Bivalent vaccine: HPV types 16 and 18</td>
</tr>
<tr>
<td>Dose</td>
<td>0.5 mL intramuscular injection at 0, 2 and 6 months</td>
<td>0.5 mL intramuscular injection at 0, 1 and 6 months</td>
</tr>
<tr>
<td>Approval</td>
<td>Approved for sale</td>
<td>Not yet available</td>
</tr>
</tbody>
</table>
How to Visualize Public Health Data?  
Part one: Box Plot and Map

**ABSTRACT**
Health care professionals including family physicians increasingly become involved in public health data analyses. Data visualisation is the first step in data analyses, which help to disclose complex structures within data. The chief aim of the present article, which is the first article in a series of two, is to discuss the pros and cons of two ways of data visualisation i.e. box plot and map using a real public health data example.

**Introduction**
Health care professionals increasingly become involved in public health data analyses. They either have to analyse public health data by themselves or have to use the results of the analyses, which have been done by other health care professionals. Therefore, they have to be familiar with different ways of public health data analyses. Data visualisation is the first step in data analyses, which help to disclose complex structure in data\(^{(1)}\). From this point of view, data visualisation may not only create interest and attract the attention of the viewer but also provide a way of discovering the unexpected\(^{(2)}\). In the present article, which is the first article in a series of two, the pros and cons of two ways of data visualisation i.e. box plot and map are discussed, using a real public health data example.

**Box Plot**
One of the most useful methods of summarising data is to present the lowest value, the lower quartile, the median, the upper quartile and the highest value in a graph called box plot\(^{(3)}\). In this display, the median is used to show the central value and the range of the upper and lower quartiles to show variability of the data.

To make this graph, a box is drawn with ends at the upper and lower quartiles and a crossbar at the median value. Next, a line is drawn from the lower quartile to the lowest value and from the upper quartile to the highest value. To complete this picture and by using the following formula, the position of the outliers is also indicated usually using a circle symbol\(^{(3)}\):

Lower quartile - 1.5 inter-quartile range & upper quartile + 1.5 inter-quartile range

The application of box plot will be demonstrated using a public health database later on.

**Map**
“From the perspective of public health practice, knowledge that a health problem is concentrated in identifiable places is essential for the efficient distribution of resources for prevention, treatment or amelioration\(^{(4)}\).” Therefore, maps are becoming more and more important in public health data analyses.

The production of attractive and informative disease maps harmonize any formal statistical analyses of spatial variations and for their attractiveness, maps will influence the recipient of the information much more than the associated statistics\(^{(5)}\). Maps reveal geographical relations that are not obvious from numerical and tabular data\(^{(6)}\).

However, like any other graphical displays there are a number of principals that one has to follow in order to produce an informed map. For instance, selecting the appropriate administrative boundaries, selecting the appropriate colour scheme or hatching, plus selecting an appropriate method of data classification patterns, are among the most important issues in mapmaking, which requires cautious considerations\(^{(5,7)}\).

In the next section and by using a real public health data example I am going to show one of these principals i.e. selecting an appropriate method of data classification and for the rest...
of these principals I am going to refer the readers to the other articles\(^4\)\(^5\). It should be noted that the process of classification can be explained as systematically grouping data based on one or more characteristics. This should result in a clearer picture and should also improve insight into the data. Research has also revealed that in order to get an overview of the theme mapped at a single glance, the number of classes should not exceed more than seven\(^6\).

Public Health Data Example

The data used in this article comes from the results of Iranian National Demographic Health Survey (DHS) which was conducted in the year 2000\(^9\). The piece of data that was selected for visualisation purposes is related to the percentage of people over 15 years with hypertension in the then 28 provinces of Iran (Table 1). Based on the figures, which are presented in an ascending order in Table 1 it is very difficult to summarise the data or visualise any relationship between provinces.

In order to summarise the data a box plot was produced (Diagram 1). As mentioned earlier a number of important summary indices can be seen by this graph. For instance, by looking at this graph one could easily visualise the following summary indices:

- Lowest value = 7.10
- Lower quartile = 8.85
- Median = 11
- Upper quartile = 12.47
- Highest value = 16.20
- Inter-quartile range = 3.62

One also easily visualises that two provinces i.e. Markazi and Yazd were considered as the outliers for their high percentage of people over 15 years with hypertension i.e. 18.9 and 19.3, respectively.

Nevertheless, box plot is still unable to reveal any relationship between provinces. Therefore, one has to apply a map to reveal any such relations.

Therefore, two maps were produced from the current data selecting two acceptable methods of classification as follows: The first method is Quantile, which divides the number of observations evenly over the number of classes taken. The name of this method is based on the number of classes, for instance, when applied to four classes it is called Quartile and with five classes, Quintiles\(^8\). The second method is Equal Interval, in which the class width is equal for all classes\(^8\). For each map a white to black colouring scheme has been adopted. According to this scheme those provinces which have a higher percentage of people over 15 years with hypertension, have adopted a darker colour and vice versa.

Map 1 depicts a Quintiles classification of the percentage of people over 15 years with hypertension within different provinces of Iran. This map reveals all 28 provinces of Iran evenly categorized in five classes i.e. 6 provinces placed in three categories whilst five provinces are in two other categories. Based on this map there are five provinces i.e. Azarbayjan-e-shargi, Gilan, Qazvin, Markazi and Yazd, which adopt a black colour indicating that they have a high percentage of people over 15 years with hypertension.

Map 2 also depicts Equal Interval classification of the percentage of people over 15 years with hypertension within different provinces of Iran. For producing this map the highest percentage i.e. 19.3 has been detracted from the lowest percentage i.e. 7.1. Then, we get the resulting figure i.e. 12.2 divides by 5 i.e. the number of classes, which becomes equal to 2.44. This means that the interval between classes must be set at 2.44. Based on this map there are only two provinces i.e. Markazi and Yazd, which adopt a black colour indicating that they have a high percentage of people over 15 years with hypertension.

It should be noted that both maps are correct looking at the problem from different angles. Whilst Map One divides provinces evenly, Map two is more in accordance with box plot trying to highlight outliers. Both maps also highlight that more provinces in the northern and central parts of Iran suffer from hypertension compared to southern provinces.

Conclusion

Although maps reveal the spatial relationships that might not be seen in tables\(^10\) we should not rely on the presentation of a single map\(^5\) because a single map is only one of the large number of maps that might be produced from the same data\(^9\). On the one hand, it has been pointed out that the end point of data visualisation is not necessarily a single ‘correct’ map\(^12\), and, on the other hand, it has been argued that it is crucial to ensure that correct rules are applied in the mapping processes\(^13\). Furthermore, one should also bear in mind that other graphical displays such as box plot may also help health care professionals to better summarise and visualise their data\(^5\).

References

Table 1 The percentage of people over 15 years with hypertension within different provinces of Iran

<table>
<thead>
<tr>
<th>Iranian Provinces</th>
<th>% of people over 15 years with hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gom</td>
<td>7.1</td>
</tr>
<tr>
<td>Bushehr</td>
<td>7.5</td>
</tr>
<tr>
<td>Sistan va Baluchestan</td>
<td>7.9</td>
</tr>
<tr>
<td>Khuzestan</td>
<td>8.6</td>
</tr>
<tr>
<td>Fars</td>
<td>8.7</td>
</tr>
<tr>
<td>Golestan</td>
<td>8.7</td>
</tr>
<tr>
<td>Semnan</td>
<td>8.8</td>
</tr>
<tr>
<td>Chahar Mahall va Bakhtiar</td>
<td>9</td>
</tr>
<tr>
<td>Azarbayjan-e-gharbi</td>
<td>9.2</td>
</tr>
<tr>
<td>Kordestan</td>
<td>9.3</td>
</tr>
<tr>
<td>Lorestan</td>
<td>10.4</td>
</tr>
<tr>
<td>Kohgiluyeh va Buyer Ahmad</td>
<td>10.7</td>
</tr>
<tr>
<td>Ilam</td>
<td>10.8</td>
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<tr>
<td>Mazandaran</td>
<td>10.8</td>
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<tr>
<td>Zanjan</td>
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<tr>
<td>Khorasan</td>
<td>11.2</td>
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<td>Hamadan</td>
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<td>Kerman</td>
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<td>Ardabil</td>
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<tr>
<td>Tehran</td>
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<td>Gilan</td>
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<td>Qazvin</td>
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<tr>
<td>Markazi</td>
<td>18.9</td>
</tr>
<tr>
<td>Yazd</td>
<td>19.3</td>
</tr>
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</table>
Diagram 1: Box plot depicting the percentage of people over 15 years with hypertension within different provinces of Iran.
Map 1 Map depicting Quintiles classification of the percentage of people over 15 years with hypertension within different provinces of Iran.
Map 2: Map depicting Equal Interval classification of the percentage of people over 15 years with hypertension within different provinces of Iran.
ABSTRACT

The worldwide incidence of cleft palate (with or without cleft lip) is 1.750-1.2000. Patients with cleft palate are more prone to hearing loss than normal individuals and this decrease in hearing is secondary to eustachian tube (ET) dysfunction. The dysfunction in ET function is due to an abnormal insertion of levator veli palatini and tensor veli palatini muscles into the posterior margin of the hard palate and the palatal aponeurosis.

Aim and Objective

This study aims to:

1. Confirm the existence of otological problems associated with cleft palate.
2. To assess the severity of these problems

Materials and Methods

The cases are selected from patients attending the ENT clinic at KHMC (KING HUSSEIN MEDICAL CENTER) during the period between April 2006 - May 2007.

During the first visit, history and clinical examination of the head and neck region are undertaken followed by common and special investigations done during the next visit.

Hearing assessment was performed on patients 5 years of age and above using the tuning fork tests in the clinic and pure tone audiometry (PTA)

Patients younger than 5 years of age had their hearing assessed by distraction tests.

Investigations:

1. PTA (patients > 5 years of age)
2. Tympanometry (to all patients in order to assess ET function)
3. X-ray mastoids (both sides)

Results and Discussion

56 cases of cleft palate patients (with or without cleft lip) are included in this study.

(18 patients were males and 38 were females).

20 patients belong to the age group 2-5 years (90% are females)
8 patients belong to the 1-2 year and 5-10 year age groups respectively.
8 infants were included in the study.
12 patients belong to the 10-20 year age group.
8 patients were older than 20 years.

About 87.5% of these patients with cleft palate are having ear problems.
12.5% of the ears affected have normal tympanic membrane (TM) (14 ears).
64.2% of the ears affected have dull TM with absent normal TM landmarks (72 ears).
7.1% of the affected ears have active effusion with minimal retraction (8 ears).
14.2% of the ears affected have chronic suppurative otitis media with TM perforation (16 ears).
1.85% of the ears affected have attic pathology and possible cholesteatoma (2 ears).

ET dysfunction was found among 84% of patients with cleft palate and that dysfunction is inversely related to the patient’s age.

Regarding tympanometry:

23.2% of patients have Type A tympanogram.
75% of the patients have Type B tympanogram (recurrent effusion in the middle ear) which leads to mild to moderate conductive hearing loss.

Only 1 patient got Type C tympanogram with ET dysfunction (-ve middle ear pressure).

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Key Words: cleft palate, ET dysfunction, otitis media with effusion (OME).
Conclusion

1. The most affected age group among patients with cleft palate is 2-5 years.
2. ET dysfunction is common among these patients.
3. Most of these patients with cleft palates and ET dysfunction suffer from hearing loss.
4. Adenoid size has no impact on the severity of hearing loss among patients with cleft palate.

References


Table 1: The patients distribution according to otoscopic findings the number of ear s= 112)

<table>
<thead>
<tr>
<th>Otoscopic findings</th>
<th>Number of ears</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal TM</td>
<td>14</td>
<td>12.5</td>
</tr>
<tr>
<td>Dull TM</td>
<td>72</td>
<td>64.4</td>
</tr>
<tr>
<td>Retraction/OME</td>
<td>8</td>
<td>7.1</td>
</tr>
<tr>
<td>CSOM with TM perforation</td>
<td>16</td>
<td>14.2</td>
</tr>
<tr>
<td>CSOM with attic disease</td>
<td>2</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Table 2: The patients distribution according to PTA(Pure Tone Audiometry) results (n=56)

<table>
<thead>
<tr>
<th>Pure Tone Audiometry</th>
<th>Number of Patients</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal hearing</td>
<td>13</td>
<td>23.5</td>
</tr>
<tr>
<td>Unilateral hearing loss</td>
<td>20</td>
<td>35.3</td>
</tr>
<tr>
<td>Bilateral hearing loss</td>
<td>23</td>
<td>41.2</td>
</tr>
</tbody>
</table>

Figure 1 A. Retraction pars - tense region, B. Dull TM with loss of light reflex - OME