Knowledge, Attitude and Practice towards Immunizations among Mothers in a Traditional City in the United Arab Emirates

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Abstract

Background: The United Arab Emirates (UAE) has a high coverage of childhood immunizations, but since coverage highly depends on the knowledge and attitude of mothers, it is important to assess these in a rapidly developing and changing society.

Methods: The survey enrolled 217 women attending maternity clinics in Al Ain, a traditional desert city in the Emirate of Abu Dhabi, UAE and estimated the prevalence of a positive attitude towards immunizations. Knowledge and attitude variables as well as factors related to these variables were explored.

Results: Having a positive attitude towards immunizations was prevalent in 93% of mothers. Three factors significantly related to a positive attitude arose: knowledge, education and Arab nationality. Three factors associated with knowledge also arose: education, receipt of information on immunizations from health professionals and, again, Arab nationality.

Conclusion: Despite the currently highly prevalent positive attitude towards immunizations in the United Arab Emirates, information by health professionals should focus more on parents with lower education and those of non-Arab nationality.

Keywords: Attitude; Immunizations; knowledge; practice.

Introduction

Immunization of infants and young children against serious infectious diseases is among the most successful and cost-effective interventions in preventative health care. The success of these programs relies on sufficiently high coverage to maintain herd immunity. Coverage, however, can be affected by several factors.

Low socioeconomic status, sometimes resulting in counteractive practical circumstances such as lack of transport, may play a role in preventing the completion of the full set of immunizations. In addition, acceptance of any program is highly dependent on parental attitudes towards immunization. A fear of adverse effects has a negative impact on paternal attitude. For example, in response to a hypothesized link to Autism, coverage of the Measles-Mumps-Rubella (MMR) immunization in some areas of Scotland decreased significantly, reaching dangerous levels below 80%. Other examples of adverse effects feared by parents are overload of the child’s immune system by exposure to a combination of
vaccines and, additionally, effects not yet observed in new vaccines or new combinations (novelty) 6. Further, in relation to vaccine preventable serious infectious diseases, some parents minimize the seriousness of the effects of these diseases compared to the risk of adverse effects from immunization7. Another reason for refusal of immunizations may be membership of a strict-observance religious group such as the Amish in the USA 8 or the Orthodox Protestants in the Netherlands 9. These groups constitute an additional hazard as member families frequently live in clusters with low coverage that can allow serious outbreaks of vaccine preventable disease 10.

From the above examples, it is clear that different groups of people with low coverage need different approaches in order to increase coverage 11. Some groups may simply need more reminders and more flexibility from the immunization services while other groups may need more information tailored to their specific concerns. Even in a population with high coverage, therefore, it is important to identify attitudes and concerns about immunizations in order to improve services and maintain ongoing high coverage 11.

In the United Arab Emirates (UAE), vaccination coverage is high due to a rigorous follow-up programme; reminders are sent to defaulters until their children reach primary school age and beyond. For example, in 2006, coverage for the Bacille Calmette-Guerin Vaccine (BCG) was 98% while for both the Pentavalent (DTP/HBV/Hib) and the Measles-Mumps-Rubella (MMR) vaccines, coverage was 92% 12. In 2008, average immunization coverage was more than 90% 13. However, as the UAE rapidly develops and the goal of high coverage remains, it is important to assess maternal knowledge, beliefs and attitudes with respect to immunizations. The objective of this study, conducted by final year medical students, was to assess the knowledge, attitude and practice of mothers in Al Ain, a city in the Emirate of Abu Dhabi, UAE, with respect to childhood immunization.

Methods
Childhood Vaccinations in the UAE
The vaccinations provided for newborn babies and small children are as follows.
At birth: Tuberculosis and Hepatitis B followed by three vaccinations of Diphtheria, Tetanus, Pertussis.
Within the first year of life: Haemophilus Influenzae Type B, Inactivated Poliovirus and Prevnar and another two of Hepatitis B.
At 12 months: Measles, Mumps, Rubella, Varicella and Hepatitis A.
At 18 months: repeat vaccine boosters for Diphtheria, Tetanus, Pertussis, Haemophilus Influenzae Type B, Inactivated Poliovirus and Prevnar.

A high uptake in vaccinations is being achieved by means of a rigorous follow-up programme, reminders being sent to defaulters until children reach primary school age and even beyond.

Design, Study Area and Population
A survey, using questionnaires, was conducted in Al Ain, the second largest city in the Emirate of Abu Dhabi, which itself is the largest of the seven emirates forming the United Arab Emirates (UAE). Al Ain is a traditional yet well-developed oasis city with a population of approximately 400,000 and it has the largest proportion of Emirate nationals of all the cities in the UAE.

Our study population included mothers attending obstetric wards and antenatal clinics in three main hospitals in Al Ain, viz. Tawam Hospital, Al Ain Hospital and Oasis Hospital. The design of the questionnaire, the data collection and the data entry were conducted by final year medical students (MS) assisted by supervisors as part of their Community Medicine rotation of the Faculty of Medicine and Health Sciences of the UAE University.

The Al Ain Medical District Human Research Ethics Committee approved the study protocols.
All subjects gave informed consent.

Sample Size and Data Collection
During a 6-day data collection period in November 2006, the MS collected a convenience sample by approaching some 240 mothers, explaining the objective of the study and seeking their consent to participate. The data collection had to be done within this short time frame because the curriculum allows only four weeks for the Community Medicine rotation. Therefore the design included a convenience sample. This sample size would be sufficient to estimate percentages (e.g. vaccination uptake) with sufficient precision: 95% confidence intervals will have a total width of about 8-9%. The numbers collected in the three hospitals were roughly proportionate to the number of hospital beds for deliveries. The questionnaire was designed in English and translated into Arabic by the students. The two resulting versions were compared by Arabic speaking Faculty Members. It comprised demographic and socio-economic questions, questions on perceived adverse effects of immunizations and sources of information, questions testing knowledge of childhood immunizations (aim, duration of protection, severity of diseases prevented, possibility of side effects, age at start program, importance of adherence, which diseases prevented), on satisfaction with the immunization service in the UAE, on immunization status of the women’s own children and on the intention to receive all immunizations for the new baby. Those mothers who signed informed consent completed the questionnaire in the presence of the MS who could offer clarification if required.

Statistical Analysis
The data were entered twice in Microsoft Access 2003. Epi-info was used to detect keystroke errors. Data were then converted to SPSS 17.0 for analysis. Descriptive statistics of subject characteristics and knowledge, attitude and practice variables were calculated. From seven knowledge questions on subjects indicated above, a score was calculated by counting the number of correct answers, adding one point if at least six (out of 10) diseases were correctly indicated as being prevented by the program and adding one more point if none (out of four diseases) was incorrectly indicated as being prevented by immunizations. This yielded a score with a theoretical range 0 to 9. Mothers considered having a positive attitude towards immunizations (PATI) were those who expressed the intention to receive all immunizations for the new baby and, if this was not their first child, indicated that all their other children had received immunizations according to the program.

Determinants of Intention to Immunize
Associations of PATI with subject characteristics, knowledge score and variables on information sources and experience (marked * in Table 2) were assessed with univariable logistic regression, in both the total group and subgroup of women with at least one child. Odds ratios (OR) with 95% confidence intervals (95% CI) were calculated for associations with a p-value ≤ 0.10. Variables with p ≤ 0.10 were included in a multivariable model whereby variables were selected with a stepwise method (Backward Wald).

Determinants of Knowledge
As knowledge was expected to be an important predictor of PATI, factors associated with knowledge (score) were assessed by linear regression with, in the case of independent nominal variables with more than two categories, Tukey’s post hoc test in order to determine which categories differed significantly from others. In the case of a continuous independent variable, a test for trend was carried out. As a final step, a multi-variable regression was carried out with all significant variables in the model using a Backward elimination method to build the final model. In this part of the analysis, with knowledge score as the dependent variable, p-values ≤ 0.05 were considered significant. Validity of assumptions underlying linear regression was investigated. SPSS version 17 was used for all analyses.

Results
From 240 mothers invited to participate, a total of 218 (91%) agreed. Of the 22 who refused,
some had just delivered and were in pain, others had just been discharged and had no time and some were just not interested. For one participant, most of the data were lost and, consequently, this subject was excluded from the analysis. Two subjects were illiterate Urdu speaking women and for these subjects the questionnaire was translated by an interpreter. A final total of 217 subjects therefore remained for the analysis.

**General Characteristics**

UAE nationals formed the majority of the sample (53%), the mean (sd) age was 29.0 (5.7) years and the median number of children (including the new baby) was 3 (range: 1 – 15). For 44 women (20.3%) this was their first child. The women were well educated (44% had a university degree). However, 72% were unemployed (see Table 1).

**Knowledge and Attitude on Childhood Immunizations, Sources of Information, Experience and Satisfaction with Service**

Over 80% of the participants were aware of the importance of adherence to the program. More than 85% of the participants knew that childhood vaccinations prevent life-threatening diseases. 62% were aware that immunizations provide lifelong protection. The range of knowledge score was 1-9 (theoretical range 0-9) and the mean (sd) was 5.87 (1.67). About one third scored 5 or lower and about 40% scored 7 or higher. About half of the subjects obtained information on immunizations passively from health professionals while over one third actively asked for this information. Only 16% reported a health professional as the main source of information regarding the side effects of childhood immunizations. The most likely reason indicated by our subjects for the refusal of immunizations was that the mother perceived immunization as unnecessary. Other reasons mentioned spontaneously mostly indicated a lack of knowledge. Of the 175 women who had previously borne children, 74 (42%) reported side effects of childhood immunizations while almost 100% were satisfied with the immunization service in the UAE (see Table 2).

Table 1. Subjects’ Characteristics (N=217)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital</strong></td>
<td></td>
</tr>
<tr>
<td>Tawam</td>
<td>98 (45.0)</td>
</tr>
<tr>
<td>Al Ain</td>
<td>84 (38.7)</td>
</tr>
<tr>
<td>Oasis</td>
<td>35 (16.1)</td>
</tr>
<tr>
<td><strong>Nationality</strong></td>
<td></td>
</tr>
<tr>
<td>UAE</td>
<td>115 (53.0)</td>
</tr>
<tr>
<td>Gulf countries*</td>
<td>23 (10.6)</td>
</tr>
<tr>
<td>Arab countries**</td>
<td>52 (24.0)</td>
</tr>
<tr>
<td>Other countries***</td>
<td>27 (12.4)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>17-25</td>
<td>59 (27.2)</td>
</tr>
<tr>
<td>26-35</td>
<td>121 (55.8)</td>
</tr>
<tr>
<td>36-45</td>
<td>28 (12.9)</td>
</tr>
<tr>
<td>Unknown</td>
<td>9 (4.1)</td>
</tr>
<tr>
<td><strong>Number of children (excluding the new baby)</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>42 (19.4)</td>
</tr>
<tr>
<td>1</td>
<td>49 (22.6)</td>
</tr>
<tr>
<td>2</td>
<td>35 (16.1)</td>
</tr>
<tr>
<td>≥3</td>
<td>91 (41.9)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Less than primary school</td>
<td>19 (8.8)</td>
</tr>
<tr>
<td>Up to high school</td>
<td>100 (46.1)</td>
</tr>
<tr>
<td>University</td>
<td>96 (44.2)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Not employed</td>
<td>156 (71.9)</td>
</tr>
<tr>
<td>Student</td>
<td>12 (5.5)</td>
</tr>
<tr>
<td>Employed</td>
<td>49 (22.6)</td>
</tr>
<tr>
<td><strong>Income family (AED, monthly)</strong></td>
<td></td>
</tr>
<tr>
<td>&lt; 4000</td>
<td>43 (19.8)</td>
</tr>
<tr>
<td>4000 - &lt;8,000</td>
<td>75 (34.6)</td>
</tr>
<tr>
<td>8,000 - &lt;15,000</td>
<td>56 (25.8)</td>
</tr>
<tr>
<td>≥ 15,000</td>
<td>26 (12.0)</td>
</tr>
<tr>
<td>Unknown</td>
<td>17 (7.8)</td>
</tr>
</tbody>
</table>

* Other than UAE: Iran, Oman, Bahrain, Qatar, Saudi Arabia, and Kuwait
** Other than Gulf countries
*** Majority from India, Pakistan and Philippines
+ Maximum number of children was 15
++ 1 AED is about 0.3 US$
Table 2. Knowledge and Attitude on Childhood Immunizations (CI), Sources of Information, Practice, Experience and Satisfaction with Service

<table>
<thead>
<tr>
<th>Variable</th>
<th>All women (N=217)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge score on CI*+ 1 ≤ ≤ 5</td>
<td>76 (35.0)</td>
</tr>
<tr>
<td>6</td>
<td>53 (24.4)</td>
</tr>
<tr>
<td>7 ≤ ≤ 9</td>
<td>88 (40.6)</td>
</tr>
<tr>
<td>Thinks that adherence to and completion of schedule are important</td>
<td>180 (82.9)</td>
</tr>
<tr>
<td>Actively seeking information from health professionals regarding CI*</td>
<td>82 (37.8)</td>
</tr>
<tr>
<td>Passively receiving information from health professionals regarding CI*</td>
<td>116 (53.5)</td>
</tr>
<tr>
<td>Medical professionals reported as main source of information regarding side-effects of CI*</td>
<td>36 (16.6)</td>
</tr>
<tr>
<td>Positive attitude towards immunizations</td>
<td>202 (93.1)</td>
</tr>
<tr>
<td>Perceived reason why people don’t vaccinate++ Transportation problem</td>
<td>25 (11.5)</td>
</tr>
<tr>
<td>Husband disapproves</td>
<td>24 (11.1)</td>
</tr>
<tr>
<td>Mother thinks it’s not necessary</td>
<td>130 (59.9)</td>
</tr>
<tr>
<td>Vaccine out of stock</td>
<td>16 (7.4)</td>
</tr>
<tr>
<td>Other**</td>
<td>56 (25.8)</td>
</tr>
</tbody>
</table>

Subgroup of women for whom this is not the first born child (N=175)

<table>
<thead>
<tr>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All children fully vaccinated</td>
</tr>
<tr>
<td>Intention to have the new baby fully vaccinated</td>
</tr>
<tr>
<td>Children had side-effects after CI (mostly fever)</td>
</tr>
<tr>
<td>Not satisfied with immunization service in UAE*</td>
</tr>
</tbody>
</table>

*These variables were, together with the variables in Table 1, tested for their association with a positive attitude towards immunizations
+This score has a theoretical range from 0 to 9
++Subjects could tick more than one option, therefore the total percentage is > 100%
**Mentioned were: lack of knowledge (most frequent), laziness, practical barriers and fear of side effects

PATI and Associated Factors
Of the total sample, 202 subjects (93.1%, 95% confidence interval: 88.9% - 96.1%) had PATI. Univariable analysis showed factors associated (p ≤ 0.10) with PATI: knowledge, a higher education, younger age, Arab nationality and hospital (one of the three participating hospitals had a lower percentage (86%) of intention to immunize) (see Table 3). The final multivariable model included knowledge, age and hospital with OR, 95% CI and p-values (not shown) similar to those obtained in the univariable analysis. The results for the subgroup of mothers who had previously borne at least one child (not shown) were similar to the results of logistic regression for the whole sample. In this subgroup, the univariable associations with experience of side effects and being dissatisfied with the UAE immunization service were not significant: p = 0.39 and p = 0.21, respectively.

Factors Associated with Knowledge
Mean knowledge score values for subgroups and p-values for univariable associations are shown in Table 3. Variables associated (p < 0.10) with higher knowledge were: Arab nationality, older age, higher education, being a student, being employed, higher income and passively receiving information from health professionals. In the multivariable model, only Arab nationality, higher education and passively receiving information from health professionals remained significant predictors of knowledge (p < 0.05). Older age remained a factor of borderline significance (p=0.06).

Discussion
This survey in mothers attending obstetric wards and antenatal clinics in Al Ain, a traditional Muslim city in the United Arab Emirates, found that the prevalence of PATI was high. The prevalence was similar to the vaccination coverage reported by the UAE Ministry of Health. Women were satisfied with the immunization service in the UAE.

Factors Associated with PATI
Older mothers were less likely to have a PATI, regardless of education, knowledge or number of children. Perhaps, in older women, this
Table 3. Results of Univariable Logistic Regression with Positive Attitude towards Immunizations (PATI) as Outcome and of Univariable Linear Regression with “Knowledge score” as Outcome

<table>
<thead>
<tr>
<th>PATI</th>
<th>Logistic model with PATI as outcome+</th>
<th>Linear model with Knowledge score as outcome++</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>OR</td>
</tr>
<tr>
<td>Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tawam</td>
<td>94 (95.9)</td>
<td>1</td>
</tr>
<tr>
<td>Al Ain</td>
<td>78 (92.9)</td>
<td>0.37</td>
</tr>
<tr>
<td>Oasis</td>
<td>30 (85.7)</td>
<td>0.26</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAE</td>
<td>109 (94.8)</td>
<td>1</td>
</tr>
<tr>
<td>Other Gulf</td>
<td>23 (100)</td>
<td>n.a.</td>
</tr>
<tr>
<td>Other Arab</td>
<td>48 (92.3)</td>
<td>0.54</td>
</tr>
<tr>
<td>Other</td>
<td>22 (81.5)</td>
<td>0.24</td>
</tr>
<tr>
<td>Age*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-25</td>
<td>56 (94.9)</td>
<td>0.92</td>
</tr>
<tr>
<td>26-35</td>
<td>114 (94.2)</td>
<td>0.24</td>
</tr>
<tr>
<td>36-45</td>
<td>32 (86.5)</td>
<td>0.24</td>
</tr>
<tr>
<td>Number of children (excl. new baby)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>40 (95.2)</td>
<td>0.54</td>
</tr>
<tr>
<td>&gt; 0</td>
<td>162 (92.6)</td>
<td>0.54</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;University</td>
<td>107 (89.9)</td>
<td>1</td>
</tr>
<tr>
<td>University</td>
<td>93 (96.9)</td>
<td>3.48</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>143 (91.7)</td>
<td>0.20</td>
</tr>
<tr>
<td>Student/employed</td>
<td>59 (96.7)</td>
<td>0.20</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 4000</td>
<td>40 (93.0)</td>
<td>0.41**</td>
</tr>
<tr>
<td>4000 - &lt;8,000</td>
<td>70 (93.3)</td>
<td>0.41**</td>
</tr>
<tr>
<td>8,000 - &lt;15,000</td>
<td>53 (96.4)</td>
<td>0.41**</td>
</tr>
<tr>
<td>≥15,000</td>
<td>25 (96.2)</td>
<td>0.41**</td>
</tr>
<tr>
<td>Actively seeking info from health profess.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>123 (95.3)</td>
<td>0.16</td>
</tr>
<tr>
<td>Yes</td>
<td>74 (90.2)</td>
<td>0.16</td>
</tr>
<tr>
<td>Passively receiving info from health prof.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>88 (94.6)</td>
<td>0.65</td>
</tr>
<tr>
<td>Yes</td>
<td>108 (93.1)</td>
<td>0.65</td>
</tr>
<tr>
<td>Health profess. main source of info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>167 (92.3)</td>
<td>0.31</td>
</tr>
<tr>
<td>Yes</td>
<td>35 (97.2)</td>
<td>0.31</td>
</tr>
<tr>
<td>Knowledge score *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 5</td>
<td>64 (84.2)</td>
<td>1.82</td>
</tr>
<tr>
<td>6 ≤ ≤ 9</td>
<td>52 (98.1)</td>
<td>1.82</td>
</tr>
<tr>
<td>≥ 10</td>
<td>86 (97.7)</td>
<td>1.82</td>
</tr>
</tbody>
</table>

+ For associations with p < 0.10 the odds ratio (OR) and 95% confidence interval is shown; ++ For nominal independent variables with >2 categories, a post hoc test (Tukey) was carried out. Mean knowledge scores of categories that as a result of this post hoc test were significantly different from other (groups of) categories were printed in bold italic. For significance a cut-off value of 0.05 was chosen.

* Variables were used in the model as continuous variables. This means e.g. for “knowledge” that with an increase of one point the odds of PATI is multiplied with a factor 1.82; ** Test for trend
reflects a higher prevalence of traditional nihilistic views, such as destiny being the cause of disease. Other variables associated with PATI were knowledge and education. This was further indicated by what mothers perceived as, in general, the main reason for refusal of immunizations (“It is not necessary”). This belief may result from either a lack of knowledge or a failure to understand the wide range of serious diseases preventable by immunization.

A further important issue arising from the results is that only 16% reported that a health professional was the main source of information regarding the side effects of childhood immunizations. A large proportion of mothers, it seems, appear to obtain information on side-effects from other sources such as the media or the internet where opponents of vaccinations may invariably publish biased or unreliable interpretations of proven scientific results. Unless properly addressed, this erroneous information on side-effects, together with a possible diminishing perception of the lethality of vaccine preventable diseases, could adversely affect vaccine coverage. A key issue in the maintenance of the existing high vaccination coverage in the UAE, therefore, is the provision of a client based approach by health care workers in order to provide the correct and most up-to-date information to parents, most especially those mothers in the category “other nationality”, mainly from Pakistan and India, but also those women of a compromised educational standard.

Factors Associated with Knowledge
It was found that the knowledge score was lower in those women with of a compromised educational standard, in women who did not receive information from health professionals and in non-Arab women. It is a truism that knowledge increases with education. It is, however, questionable whether those more informed women actually received their information from health professionals. This observation could be due to recall bias: someone who remembers being well informed also knows more about the program. For some women, the information provided may not have been targeted to their level of understanding or to their specific questions and concerns. The less informed women of the category “other nationality” can possibly be explained by compromised education in this group. We did adjust for education in the analysis, but the adjusting variable comprised only two levels and this could possibly have resulted in residual confounding.

Limitations
External and Internal Validity
The fact that the present study was a final-year student project determined our selection method, i.e. convenience sampling. To enhance representativeness of the sample, inclusion was done in such a way that the numbers were roughly proportional to the number of hospital beds for pregnant mothers. The selection procedure, especially the short selection period, may have caused some bias and may therefore have slightly affected the external validity of the study. It is however reassuring that our prevalence of PATI was very close to the national immunization coverage. It is unlikely that the internal validity has been compromised: participation was high (91%) and the reasons for non-participation (mostly circumstantial, e.g. in pain or just leaving with the new born baby) were very unlikely to be related to factors related to attitude towards vaccinations. No participant refused because of language problems.

Other Issues
Due to the high prevalence of PATI, the sample size, although adequate to estimate percentages with sufficient precision, was not sufficiently large to exercise a multivariable analysis with many degrees of freedom.

Due to the limited time frame of the students’ project, it was not possible to enroll more mothers, and due to an inconsistency in the questionnaire, no personal reasons for refusal of vaccinations were given.

Conclusions
The prevalence of a positive attitude towards immunizations was excellent in this group of mothers, and satisfaction with the service was
high. Knowledge on childhood immunizations, however, was lower in those who reportedly did not receive information from health professionals.

In order to maintain the current high vaccination coverage in the UAE, it is recommended that health care workers focus particularly on parents of a compromised education and, further, tailor and target their information to appropriate levels of each mother’s understanding.

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Competing Interests
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References

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Relationship between Cognitive Impairment and Depressive Symptoms

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Abstract
The purpose of the study was to assess association between depressive symptoms and different domains of the cognitive status in patients with acute ischemic stroke and to identify cognitive domains that significantly correlated with the presence of depressive symptoms. The study comprised 40 acute ischemic stroke patients (14 women and 26 men) aged 45-78 years (± SEM 55.6 yrs.), with 8-16 years of education (± SEM 13 years). Beck’s Depression Inventory (BDI) was used to assess depressive symptoms whereas the cognitive status was evaluated using a comprehensive neuropsychological testing battery which measures performance in different cognitive domains. The following domains were evaluated: visual-constructive performance in two dimensions and executive function, language, immediate recall, delayed recall, attention, divergent reasoning. The multiple regression analysis was applied. The results showed the overall regression model to be significant [R= 0.601; R²= 0.362; F (7.62) =5.031; p<0.001]. The language domain was found to be a significant partial predictor of depression, with poorer performance in this domain correlating with a higher prevalence of depressive symptoms.

Keywords: Ischemic stroke, cognition, depression.

Introduction
The nature of the relationship between cognitive impairment and depression following stroke involves a complex interaction between depression, localization of ischemic lesion, and cognitive impairment. The association between cognitive status and depressive symptoms has been well established in several studies.¹-⁶ Patients suffering from post-stroke depression have been found to have more severe cognitive impairment compared to stroke patients who do not develop depression.⁷

Researchers have shown cognitive deficits to be significantly more frequent and severe in patients with left-sided stroke who develop major depression than in those with no depression.⁸ This association between depression and impaired cognitive function is most striking in the acute phase of stroke, although it may persist for over one year following stroke. In addition, duration of depression is longer in patients with both depression and cognitive impairment compared to patients with depression and no cognitive impairment. On the other hand, recovery of cognitive function takes longer in depressed compared with non-depressed patients, suggesting that depression has a negative effect on recovery of cognitive function.⁹

Robinson (2006)⁶ reported that the neuropsychological assessment showed that patients with major depression had significant deficits in almost all domains of cognitive function.

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status, compared with non-depressed patients. Three and six months following stroke the patients showed deficits in the domains of verbal logical thinking, comprehension, nonverbal problem solving, verbal memory (primarily logical memory and serial learning), visual memory (primarily on measures of visual reproduction, visual recognition, and attention), executive functions (Trail Making Test Form A and verbal fluency) and visual-constructive functions. The latter study did not include subjects with aphasia. The neuropsychological assessment showed a significant association between major depression and cognitive impairment involving most of cognitive domains. Moreover, he found that patients with major depression showed significantly more severe cognitive impairment, as assessed by the Mini Mental State Examination test, compared with subjects with minor depression or with no affective disorder.

In a one-year prospective study with 106 patients with first-ever stroke Kauhanen et al. (1999) found a negative correlation between severity of depression and performance on neuropsychological tests assessing nonverbal problem solving, memory, attention, and psychomotor speed within a year following stroke. The same authors found strong association between the presence of dysphasia and a high risk of major depression in the same population.

When discussing the relationship between post-stroke depression and cognitive status, it is impossible not to mention a rather controversial association between depression and aphasia. One of the studies that failed to demonstrate an association between post-stroke depression and cognitive impairment did find a significant association between aphasia and post-stroke depression. Aphasia represents a great problem for post-stroke depression investigators. Consequently, it is common for investigators to exclude from study patients with moderate or severe speech deficits, primarily those with speech comprehension disorders. However, although patients with speech comprehension disorders have generally been excluded from studies on post-stroke depression, some authors have proposed that it is aphasia itself that causes poststroke depression.

Gainotti (1972) suggests that depressive reaction associated with left-sided lesions represents an expected response manifested in depressive reactions and outbursts of anger for having lost speaking ability, speech being one of the most important elements of every person’s life. Likewise, Benson (1979) assumes that depression sometimes represents a secondary psychological reaction to speech loss; aphasia is a common sequela of damage to the dominant (left) cerebral hemisphere.

The true prevalence of depression among patients with aphasia and speech comprehension disorders remains unclear. The relationship between non-fluent (Broca’s) aphasia and depression may be affected by the fact that both depression and non-fluent aphasia occur as a direct consequence of lesions of the left frontal lobe. Owing to the impossibility of assessing depression in patients with language impairment, there have been attempts to construct alternative diagnostic instruments based on information provided by patient’s relatives. Despite the efforts, not even these instruments have been able to provide a valid assessment of depression in patients with speech comprehension impairment.

Method

Subjects

The study comprised a group of 40 stroke patients (26 male, 14 female), aged 45-78 years (± SEM 55.6 yrs.) with 8 to 16 years of education (± SEM 13 years). The inclusion criterion for the acute (1-14 days) ischemic stroke group was the diagnosis of first-ever clinically verified acute ischemic stroke. The acute ischemic stroke diagnosis was established based on clinical symptoms and neuroradiological correlates obtained with brain computerized tomography. Only hospitalized patients were included. The exclusion criteria for the acute ischemic stroke group were: any previous (clinically verified) stroke; presence of
sensory and/or motor aphasia or severe dysphasia; paralysis of the dominant arm; visual and auditory impairments that made impossible performing test tasks; impaired consciousness; previous psychiatric disorders or history of depression; and Mini Mental Status Examination (MMSE) score under 15.

Procedure

Setting

The study was conducted at a private teaching hospital. As no invasive procedure was involved in the study, nor any additional drug was used for study purpose, only approval of Head of concerned department was obtained. Informed written consent was obtained either from the patient or from spouse /blood relative attendant after explaining the procedure and the purpose of the study.

In order to confirm the diagnosis of acute ischemic stroke each subject underwent neurological exam, brain computerized tomography and neuropsychological assessment. The neuropsychological assessment was performed during hospitalization, i.e., within two weeks following stroke onset.

Instruments

Symptoms of depression were assessed by using Beck Depression Inventory (BDI)\(^{15}\) The inventory represents a one-dimensional scale for assessing depression, and is commonly used in research for its proven reliability and validity. It consists of 21 questions, each with four possible answers that are assigned a score ranging from 0 to 3, with higher scores indicating more severe symptoms. The total BDI score is obtained by simple addition of all the scores on 21 items, and the total score ranges from 0 to 63, with a higher score representing more severe depression. The intensity of depressive symptoms can be quantified by assigning one of the four possible degrees of the intensity of depressive symptoms. The cut off score for the presence of depressive symptoms is 9. BDI serves primarily for detecting the presence of depressive symptoms and not for making a diagnosis of a depressive disorder, and should be used accordingly.

The neuropsychological assessment included an extensive neuropsychological battery comprising the following tests: the Trail Making Test Forms A and B (TMT A and B)\(^{16}\); the Verbal Fluency Tests (phonemic fluency and categorical fluency)\(^{17}\); the Rey Auditory Verbal Learning Test (RAVLT)\(^{18}\); the Rey-Osterrieth Complex Figure (ROCF)\(^{19,20,21}\); the Wisconsin Card Sorting Test (WCST)\(^{22}\); the Boston Diagnostic Aphasia Examination (BDAE) Repetition of Phrases, Complex Ideational Material and Instructions subtests\(^{18}\); the Boston Naming Test (BNT)\(^{23}\) and the Wechsler Memory Scale – Revised (WMS-R) Mental Control, Digit Repetition and Visual Memory Span subtests\(^{24}\).

This representation of results was done using a SPSS (version 12), multiple regression analysis, principal component analysis, and further analyses used factor scores on the first principal components of each of the cognitive domains selected. Scores of applied tests represented different domains of cognitive status and each domain was represented by the scores obtained on the tests assessing particular neuropsychological functions.

Results

The relationship between depression and different cognitive domains in the acute ischemic stroke patients group was tested using multiple regression analysis. Criterion variable were operationally defined as the total score on the BDI and predictor variables were operationally defined as the factor scores on the first principal components of the cognitive domains (executive function, attention, language, memory, immediate recall, delayed recall, divergent reasoning) and the total score on the ROCF (domain of visual-constructive performance in two dimensions).

The results showed the overall regression model to be significant \([R = 0.601; R^2 = 0.362; F (7.62) = 5.031; p < 0.001]\). As regards individual predictors, only the domain of language showed statistical significance, i.e., poorer performance in the domain of language was associated with more severe depression (Table 1).
Table 1. Partial Contributions of Predictors of BDI Performance

<table>
<thead>
<tr>
<th>Cognitive Domains</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual-constructive performance in two dimensions</td>
<td>-0.095</td>
<td>0.617</td>
</tr>
<tr>
<td>Executive function</td>
<td>0.789</td>
<td>0.580</td>
</tr>
<tr>
<td>Attention</td>
<td>-3.018</td>
<td>0.263</td>
</tr>
<tr>
<td>Language</td>
<td>-3.822</td>
<td>0.018</td>
</tr>
<tr>
<td>Delayed recall</td>
<td>-1.558</td>
<td>0.178</td>
</tr>
<tr>
<td>Divergent reasoning</td>
<td>2.394</td>
<td>0.072</td>
</tr>
<tr>
<td>Immediate recall</td>
<td>0.554</td>
<td>0.816</td>
</tr>
</tbody>
</table>

Discussion

Results have confirmed the association between depressive symptoms and cognitive status in the acute phase of ischemic stroke. The only significant partial predictor of depression found in our study was the domain of language. Poorer performance in this domain was associated with more frequent and severe depressive symptoms. This is consistent with the results of previous studies, primarily those focusing on the relationship between speech disorders, in particular aphasia, and development of depression.

Data on the relationship between depression and speech disorders are rather inconsistent. In previous studies the majority excluded patients with aphasia or severe dysphasia, due to the impossibility of assessing or the lack of adequate diagnostic methods for assessing the presence of depression in these patients.

In this study we also excluded patients with aphasia and severe forms of dysphasia and included only patients with less intensive speech impairment. For our assessment, we considered whether the patient’s speech is sufficiently preserved to allow comprehension of verbal instructions and speech articulation sufficiently preserved to enable them to respond to test requirements. It should be noted that the domain of speech in our study, was represented by scores on the neuropsychological tests, such as Boston naming test and three Boston Diagnostic Aphasia Examination subtests (complex ideational material, repetition of phrases and responses to instructions). Tests are used to assess abilities of naming, repeating phrases, comprehension of complex verbal material and comprehension and execution of simple and complex verbal instructions.

Many explanations for the association between the poor performance in the language domain and depression in acute ischemic stroke have been proposed. One emphasizes the attempts to explain the relationship through lesion location. Given the long-recognized domination of the left hemisphere in language lateralization, it is logical to expect that any left-sided brain damage, in our case left-sided stroke, leads to impairment of the language function. Clearly, the degree of speech impairment depends mainly on the precise location of ischemic stroke and the volume of the tissue affected by it. The assumption that the left cerebral hemisphere represents a leading anatomical structure for speech both in left-handed and right handed individuals was first confirmed by Penfield and Roberts, back in 1959.25 More recently, a number of studies dealing with lesion location and depression have indicated that left-sided anterior lesions are associated with the development of depression.26-28

Robinson (2003)26 stated that in the first two months following acute ischemic stroke, left-sided frontal lesions and left-sided lesions of basal ganglia were the most frequent types of lesions in patients with major depression. A research group led by the same author has recently confirmed the previous results, having found a significant association between the intensity of depression and left frontal lobe lesions in patients who suffered a stroke within previous 6 months.29 Given these findings, we can assume that depression and poorer performance in the domain of language...
actually represent two coexisting sequelae to the damage to the left cerebral hemisphere.

One possible explanation for the relationship is that depressive symptoms actually occur as a person’s reaction to his or her loss of certain language functions. This study\textsuperscript{27} excluded patients with aphasia and more severe forms of dysphasia, and included only relatively mild speech impairment. It is possible that even mild deficits in the language function, which can be manifested in various ways (e.g., difficulties in naming objects, articulation, repeating phrases, etc.), present a stress for a person and in this manner bring on a depressive reaction. One should not be forget that speech ability plays a vital role in every person’s life, and any difficulty in this domain may be highly frustrating, and if occurring suddenly as part of the suffered stroke, accompanied with some physical deficits and a hospital environment, it is clear that depressive reaction may represent an expected response to the new circumstances.

The other domain analyzed with the regression model that also contains considerable language function is the domain of divergent reasoning, comprising phonemic and categorical fluency tests. However, the divergent reasoning domain did not prove to be a significant partial predictor of performance on the BDI. The lack of significant contributions of the majority of partial predictors to predicting depression on the BDI can be interpreted as a high degree of inter-correlation, i.e. an overlap between the contents of the studied domains. It is possible that these domains, although representing different segments of cognitive status, might have been essentially “saturated” by the same subject of measurement. Each domain was represented by the factor scores on the first principal components. A large number of neuropsychological tests measuring a particular mental function made one domain, and performance on these tests was represented by the first principal components. Although clinical neuropsychology tends to construct instruments that will be able to measure a “factorially clean” psychic/mental function, this is frequently not possible, not due to any limitations of the very test applied, but rather because many psychic functions are overlapping with the content of another psychic function. Therefore, despite the careful selection of neuropsychological tests that will make a cognitive domain, there is overlapping between different domains, for the tests’ inability to measure a factorially clean function. Consequently, this can result in some degree of the content overlap between cognitive domains and impossibility to single out more domains as significant partial predictors of performance on the BDI.

**Limitations**

In this study a limited small sample size was used. Also no public sector hospital was involved in the study. In this study we did not answer any gender discrimination as this is beyond the scope of this research paper. Keeping in mind all these factors further studies are required in this regard.

**References**


Guidelines on a Code of Ethics and Professionalism for Residents Undertaking Postgraduate Medical Education

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Abstract:
The concept of structured Postgraduate Medical Education (PGME) and residency training gained widespread support from Emirati regional health authorities and has become a national priority in the United Arab Emirates (UAE). In cosmopolitan countries, such as the UAE, residents/trainees are tutored and supervised by trainers from diverse cultural, ethnic and religious backgrounds. The roles and responsibilities of trainees are defined, thereby ensuring the appropriateness and safety of patient care countrywide in situations where trainees are involved. The aim of this project was to develop guidelines for a Code of Ethics that would govern the conduct and activities of postgraduate trainees in various medical specialties countrywide. Elements of Residency training involving ethics and professionalism highlighted by various international organizations with recognized high ethical standards and the opinions scholars who have published in this field were reviewed and adapted, with preservation of core Islamic values. This document focuses on professional responsibilities in several domains: professional practice standards, professional community standards, research standards, professional relationships with colleagues, physician duties towards society, physician duties towards workplace establishment, the relationships between trainees and industry, reporting responsibilities, and lists of some behaviors that are considered unacceptable. A formal document is now available to all postgraduate trainees (Residents) to emphasize the importance and relevance of ethical considerations and professionalism in PGME with a strong sense of obligation to patients’ best interests.

Keywords: Professionalism, Trainees.

Introduction
Practicing medicine competently requires the ability to meet the relationship-centered expectations and this is known as medical professionalism. Examples of these relationships include the physician-patient relationship, physician-community, physician-health care system, physician-physician, and physician-self relationship. Adherence to proper professional conduct is a core element of clinical competency and professional misconduct, rather than problems with cognitive knowledge or clinical skills has been quoted as the most common reason for physicians to receive disciplinary action. Some surveys of medical students, reported observation of 40 to 61% of unethical events by medical team members. Ninety eight percent of students reported witnessing physicians referring to patients in a derogatory fashion and 77% indicated that those events had detrimental effect on their attitudes. These behaviors are also not
uncommonly observed in Gulf region countries, where trainees confirmed a dearth of good role models and deficiencies in teaching and assessment of competency regarding professionalism, which may contribute to their sense of a lack of acquisition of professional values. In addition, there have been observations of unprofessional behavior in the medical fields in countries such as the Kingdom of Saudi Arabia where the importance of formulating guidelines for self-regulation and disciplinary action for misconduct has been highlighted.

A formally adopted ethics document for trainees is needed for several reasons. Firstly, it is imperative that medical trainees become very much aware of ethical issues relevant to patient care and demonstrate a capability for ethical reasoning. Secondly, medical school residencies offer little formal training in ethics, often not having sufficiently trained faculty to provide the training. Thirdly, trainees learn from what they see us do (the ‘hidden’ and ‘informal’ curriculum), and this is complicated in the cosmopolitan countries such as UAE, wherein physician/trainees (Residents) are tutored and supervised by trainers from diverse cultural, ethnic and religious backgrounds. Fourthly, poor performance on behavioral and cognitive measures during residency have been shown to be associated with greater risk for disciplinary action. Finally, there is lack of uniformity in ethics education backgrounds of Residents entering training programs. In addition, such a requirement is mandatory for various internationally recognized organizations accrediting Graduate Medical Education programs such as the Accreditation Council for Graduate Medical Education (ACGME). Hence, the roles and responsibilities of trainees engaged in postgraduate medical education programs ought to be defined, thereby ensuring the safety and appropriate care of patients in situations where trainees are involved.

The stimulus to this work was an invitation from the Postgraduate Medical Education (PGME) at the United Arab Emirates University to put in place guidelines for a Code of Ethics that will govern the conduct and activities of Postgraduate Clinical Trainees ("physician/trainees") in medical specialties where ethical dilemmas that face trainees in clinical rotations are believed to be common. In this document, ethics and professionalism is understood, in a strong sense, as an obligation.

Sources of Ethics Charter
Several items from the International Council of Ophthalmology/International Federation of Ophthalmological Societies (permission to use their material was received in April, 2011), McMaster University (permission for use of the guidelines was granted in May, 2011), The Islamic Charter of Medical and Health Ethics, the University of Western Ontario (permission to use their codes on professionalism and ethics was approved on May, 2011) and the American Board of Internal Medicine (ABIM) publications on domains of professionalism and the Physician Charter by American Board of Internal Medicine (ABIM) Foundation; the American College of Physician-American Society of Internal Medicine (ACP-ASIM) Foundation; and European Federation of Internal Medicine were adopted and/or modified, while other items were developed from constructs in the literature describing professionalism with preservation of core Islamic values.

Our discussion and search led to postulation of what is required for our setting. In this document the relationships have been divided into three main categories intra-professional, inter-professional and extra-professional standards. Intra-professional standards ("within" profession), are defined as immediate professional ‘medical’ environment interactions, which focuses on physician duties towards the patient and consent to treatment, professional practice standards, professional community standards, research standards, professional relationships with colleagues, and reporting responsibilities. Extra-professional standards ("outside immediate" profession) focus on physician duties towards society and industry. Inter-professional standards ("across" profess-
sion) including physician duties towards the workplace establishment. The document also alludes to some behaviors considered to be unacceptable.

The Ethics Charter
Each section starts with an introductory statement that explains the purpose and its underlying core values i.e. “preamble”. Following that, the document provides standards “a level of quality” for what professional behaviors look like in practice.

1. Intra-Professional Standards
1.1. Physician/Trainee Duties towards the Patient
1.1a. Preamble
The physician/trainee must pledge to adhere to ethical principles and ascertain that patients are provided with appropriate care and are treated with gentleness, respect and truthfulness, and to place the patients’ needs ahead of self interest.

1.1b. Standards
The physician/trainee must pledge to:

- Consider respect for the patients’ life as the primary goal of the profession.
- Act promptly to help persons whose life or wellbeing is jeopardized by any kind of illness.
- Listen and relate to patients’ suffering and treat him/her with integrity and respect.
- Constrain from any demeaning attitude in dealing with the patient.
- Promote patient equity, ignoring any factors that may influence the level of care provided such as patients’ prestige, social or moral status, race, religion, gender, or nationality. This includes but is not limited to prescribe medicines and medical aids, or equipment, solely on the basis of medical considerations and patient needs.
- Not accept gifts from patients.

- Elicit respect for patients’ beliefs, religions, and cultures when involved in any aspect of their management.
- Ensure confidentiality in all aspects of the patient’s treatment.
- Contribute to management decisions based on the best available scientific evidence and patients’ best interests.
- Respect the patient’s right to the presence of a third party upon his/her request during intimate examination.
- Communicate effectively with patients by presenting to him/her or a representative, truthful accurate information about their medical condition and available treatment options.
- Ensure that the patient has an adequate degree of insight into his/her disease and effective methods of prevention.
- Refer appropriately whenever the patient’s case calls for such a referral. This includes giving the patient, without delay, a comprehensive medical report of his/her condition and make the medical report readily available to other doctor(s) as need be.
- Continue treating the patient in an emergency setting, unless he/she refuses to follow instructions or seeks, without the consent of the physician attending him/her, the services of another doctor.
- Optimize patient care as well as the educational experience. Patients have the right to be fully informed about, and to refuse to participate in, medical education; however, alternative care options should be offered if he/she refuses treatment in a clinical teaching setting.

1.2. Consent to Treatment
1.2a. Preamble
The physician/trainee must pledge to ensure that patient affirms to intervention and that
he/she is provided with adequate information to consent to treatment.

1.2b. Standards
The physician/trainee must pledge to:

- Obtain consent to treatment.\textsuperscript{27, 35, 37}
- Obtain consent for all interventions\textsuperscript{16}, except in cases when emergency medical action is required and informed consent cannot be obtained for any particular reason, or when the disease is communicable or poses a threat to public health or to others, and in accordance with the laws in place.\textsuperscript{24}
- Give the patient sufficient information that a reasonable person would wish to know in order to make a decision regarding his/her care.\textsuperscript{25, 35, 37}
- Ascertain that the patient has understood the information.\textsuperscript{25, 35, 37} This includes, but is not limited to, avoiding the presentation of information in a disorganized and rapid fashion, allowing too little time for consideration or blocking opportunities for questioning.\textsuperscript{25}
- Ensure that the information about risks to the patient is complete and adequate.\textsuperscript{37}

1.2c. Consent and Special Circumstances

a. The incapable or incompetent patient (e.g., various degree of limitation of comprehension due to age, immaturity, mental disability, intellectually impaired patients, terminally ill and comatose patient), should be respected both by acknowledging his/her own wishes and obtaining consent on his/her behalf by the use of an appropriate substitute decision-maker(s). The latter should be those who are most likely to understand the incompetent patient’s situation and to protect them from harm.\textsuperscript{25, 27}

b. The patient must be specifically informed if significant component(s) of a diagnostic or therapeutic procedure is/are to be performed independently by a trainee without direct supervision by the most responsible physician and/or supervisor.\textsuperscript{27}

c. The patient must be notified and provide consent for examination and clinical demonstration which are purely for educational purposes. In such cases the most responsible physician and/or supervisor should approve that such illustration does not have a negative physical or psychological impact on the patient.\textsuperscript{27}

1.3. Professional Practice Standards
1.3a. Preamble
The physician/trainee must pledge to provide high standards (quality) of care.

1.3b. Standards
The physician/trainee must pledge to:

- Perform only those procedures compatible with his/her level of training, or be assisted by the most responsible physician and/or supervisor.
- Demonstrate respect, compassion, maturity and integrity.\textsuperscript{3}
- Engage in the safe provision of medical care by understanding self inadequacies and adhering to responsibilities appropriate to the educational/training level.
- Commit to regular professional development.
- Strive to achieve competencies in technical ability and cognitive knowledge.
- Abstain from misrepresentation of training level, experience or ability.
- Maintain accurate, comprehensive, and timely medical records.
- Dress appropriately to meet requirements for hygiene, civility, cultural traditions, and societal expectation.
- Show sensitivity to variations in medical practice rituals and traditions, provided these do not contradict optimal standard practice or fundamental ethical principles.

1.4. Professional Community Standards
1.4a. Preamble
The physician/trainee must pledge to be a responsible member of their professional com-
munity by preserving standards, avoiding behaviors that would bring the community and or its members into discredit.

1.4b. Standards
The physician/trainee must pledge to:
- Base communication with colleagues on mutual personal dignity.
- Conduct conversation in a manner that advances the best interests of the patient.
- Participate in activities such as peer review process or various committees that intended to promote patients wellbeing and health care advancement.
- Refrain from appealing to others disturbance in an unjustified way for self advantage.
- Help colleagues where care does not meet professional standards.
- Spare from acting as professional testifier in legal cases unless he/she can do so accurately.

1.5. Professional Relationships
1.5.1. Trainee-Supervisor and Trainee-Trainee Relationships
1.5.1a. Preamble
The trainee-supervisor (teacher-learner) and trainee-trainee relationships should be based on a professional style that implies mutual trust, respect, and constructive cooperation. The aim of this relationship should be successful training for future independent practice and high standards for patients’ welfare at all times.

1.5.1b. Standards
The trainee/physician must pledge to:
- Maintain a professional trainee-supervisor relationship at all times, which includes but not limited to:
  - Being eager and capable to see patients, document findings and management plans, and convey the findings to the most responsible physician/supervisor.
  - Commit to joint decision-making and the provision of health care.
  - Contact the most responsible physician/supervisor if admitting any case under his/her care and indicate on the medical record he/she agrees with the plan.
  - Communicate truthfully with patients, physicians, other health professionals, and health related agencies.
  - Work collegially and effectively with professional groups.
  - Demonstrate reliability and responsibility such that he/she can fulfill duties and follow through on assigned tasks.
  - Be punctual for academic and business meetings, ambulatory clinics, ward rounds, etc.
  - Accept criticism appropriately and constructively to improve performance.
  - Notify the most responsible physician/supervisor:
    - when there is a significant change in a patient’s condition.
    - when the patient, substitute decision-maker or family has significant concerns, or when any emergency situation arises.
    - prior to the patient’s discharge or transfer to the care of another specialty or physician.
    - should the patient leave the hospital against medical advice or without planned discharge, a notation needs to
be made of the incident in the patient’s medical record.

e. whenever there is/are unusual finding(s) and/or diagnosis and/or management is not to the set standard(s).

f. prior to any intervention that might lead to short or long term severe morbidity.

- Relate well to health care members, refraining from any kind of psychological, physical or sexual intimidation or harassment.

- Refrain from critical comments of a colleague in front of patients.\(^{24}\)

- Determine to teach students, being honest in their assessments, and give assessments as appropriate with regard to academic matters or inattentive manners.

- Honor colleagues and address objectively any differences that may arise in their interaction. However, such matters should be referred to the appropriate authority (i.e., Program Director of the training program, the Coordinator/Manager of the course, the Department/Division Chair, Hospital Academic Affairs Office, Postgraduate Medical Education Office, or medical and professional affairs or any other authority according to the institution’s guidelines) for consideration and decision making.

1.5.2. Trainee-Health Professional Alliance Relationships

1.5.2a. Preamble

The trainee-health professional alliance relationship must be based on mutual respect and responsibility with a strong focus on delivering high standard (quality) health care.

1.5.2b. Standards

In dealing with members of the supporting medical staff, a physician/trainee should observe the following:\(^{24}\)

- Engage and treat with politeness and show appreciation, making any professional comments in a friendly and appropriate manner.

- Withhold criticism in the presence of patients.

- Adhere to the principles of professional ethics.

- Give clear written or verbal instruction(s) and ensure that these are carried out.

- Listen objectively, and with due regard to his/her point of view, to critique, and reluctance to implement the physician/trainee’s treatment commands.

- Endeavor to teach and train supporting medical staff who are working collaboratively with him/her, contributing to achievement of their career objectives.

1.5.3. Research Standards

1.5.3a. Preamble

The physician/trainee must pledge to be familiar and demonstrate compliance with the ethical, legal and scientific criteria for medical research, with intention of health care promotion and knowledge advancement.

1.5.3b. Standards

The physician/trainee must pledge to:

- Obtain institutional ethics board approval for any research.

- Provide patents who are research subjects with adequate information concerning the nature of the study, advantages, and disadvantages and obtain special informed consent.

- Maintain academic integrity and refrain from any act of academic dishonesty such as presenting the work of others as personal intellectual property.

- Present data accurately and declare any conflict of interest.
1.5.4. Reporting Rights and Responsibilities

1.5.4a. Preamble

The physician/trainee must pledge to protect and work for the patients’ best interest(s) and has the right and responsibility to report behavior which compromises that goal.

1.5.4b. Standards

The physician/trainee must pledge to report matters to the appropriate authority in the following circumstances:

- Should he/she have rational grounds, obtained in the course of practising his/her work, to believe that another member of the health profession has sexually abused a patient.\(^{27}\)
- Should he/she notice that another physician is acting in a way that would suggest incompetence\(^{33}\) or incapacity\(^{34}\) that compromises his/her capability to care for patients.\(^{27}\)
- Should he/she learn, in the course of practising the profession, that a patient is being treated as a result of physical or psychological violence, particularly if the victim cannot defend him/herself, should the physician believe that such an action may protect the victim from abuse.\(^{24}\)
- Should he/she have reason to believe that there has been a breach of the Code of Conduct.\(^{21}\) However, if this person is the only physician/trainee directly affected by the code violation, reporting will be at the discretion of this individual.
- Should he/she have reason to believe that the intervention of a colleague(s) or superiors may undermine appropriate medical performance, or if the physician/trainee fears that such an intervention may be hazardous to the patient, he/she should have an oral discussion of the matter with the colleague or superior concerned. If agreement cannot be reached, the matter should be referred in writing to the relevant authority for settlement.\(^{24}\)

2. Extra-Professional Relationships

2.1. Societal Standards

2.1a. Preamble

The physician/trainee must pledge to ensure effective and honest communication with the public and promote social justice with the ultimate aim of serving the sovereign will of God.

2.1b. Standards

The physician/trainee must pledge to:

- Connect with the public through accurate and effective communication.
- Abstain from falsification of competencies relating to educational and practical skills.
- Abstain from misrepresenting, masking or distorting information.
- Assume an active role in society, taking an interest in all important relevant societal matters. This includes, but is not limited to, employing his/her expertise and experience to advance the quality of health services offered to society, e.g., contributing to decision-making process(es) relevant to the utilization of limited medical resources with preservation of principles of equity/fairness in terms of distribution of services.\(^{24}\)
- Refrain from any practices or conduct that is unprofessional or harmful to the community.
- Contribute to health awareness and education, and advocate disease prevention.
- Strive to protect health resources by suggesting guidelines that optimize usage and promote the rights of all community members to an appropriate standard of health care.
3. Inter-Professional Standards

3.1. Physician/Trainee Duties towards the Workplace Establishment

3.1a. Preamble

The physician/trainee must pledge to ensure that his/her establishment promotes (and maintains) high standards (quality) of health services.

3.2b. Standards

The physician/trainee must pledge to maintain the following attitudes toward the establishment at which he/she works:

- Guard its reputation.
- Protect its property by using the resources efficiently and recommending only

<table>
<thead>
<tr>
<th>Table 1. Behaviors that are Considered Unacceptable</th>
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<tbody>
<tr>
<td>The following behaviors are not permitted in the workplace which, if exhibited, will result in disciplinary action. These include but are not limited to:</td>
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<tr>
<td>Violation of patient confidentiality. This includes but is not limited to accessing patient records that are not under his/her care team without proper permissions or disclosure of a personal secret that has come to his/her knowledge through the performance of the profession.</td>
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<tr>
<td>Creation of a hostile environment (by abusive language, offensive behavior, and intimidation) for patients or hospital staff members.</td>
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<tr>
<td>Threats or acts that can be interpreted as physical violence such as violent grabbing, pushing, throwing of instruments, etc.</td>
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<tr>
<td>Theft or any form of dishonesty such as misuse of resources and services.</td>
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<tr>
<td>Violation of the establishment code conduct and ethics.</td>
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<tr>
<td>Absence during duty hours, on call or educational activity without appropriate notification and transfer of responsibilities.</td>
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<tr>
<td>Falsification of the medical record or information.</td>
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<tr>
<td>Lateness for work, academic activities, or response to calls when scheduled to be available.</td>
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<tr>
<td>Humiliation of colleagues for negative outcome.</td>
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<tr>
<td>Inappropriate argument with patients, family members or colleagues.</td>
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<tr>
<td>Negative comments about another physician unless acting as an expert professional witness in a legal case.</td>
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<tr>
<td>Insensitivity to the patient or family such as vocalizing inappropriate comments about the patient’s medical condition, appearance, religion, or nationality, etc.</td>
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<tr>
<td>Inadequate prescription of controlled drugs.</td>
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<tr>
<td>Lack of respect for an autonomous person, such as not honoring the patient’s wishes or withholding information necessary to make a considered judgment.</td>
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<tr>
<td>Involvement of the patient as the object of medical education or research without appropriate consent.</td>
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<tr>
<td>Misrepresentation or inadequate explanation of trainee status.</td>
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<tr>
<td>Inadequate fulfillment of assigned responsibilities such as inappropriate handover of patient, insufficient explanation of the seriousness of the condition and care needed, poor liaison or delay in referral, discharge or investigations.</td>
</tr>
<tr>
<td>Infringement of the drug free workplace policy, this includes but is not limited to showing signs of chemical dependency or mood disorder such as excessive irritability, uncontrollable anger, hostility, lying, irrational remarks, sarcasm, mental confusion, drowsiness or general lack of motivation, energy, and self-esteem.</td>
</tr>
<tr>
<td>Assignment of student(s) tasks for punishment rather than for educational benefit or denying equal educational opportunities for personal favors.</td>
</tr>
<tr>
<td>Sexual harassment of any kind or breaching an existing Sexual Harassment Policy. Types of conduct which may constitute sexual harassment include, but are not restricted to:</td>
</tr>
<tr>
<td>a. Acts that can reasonably be interpreted as sexual harassment such as gender related degrading remarks that undermine the person’s role in the workplace or inquiries regarding the person’s sexual orientation or deficiencies.</td>
</tr>
<tr>
<td>b. Exhibition of sexually explicit material in the professional environment.</td>
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<tr>
<td>c. Comments that may have sexual implications such as remarks regarding one’s physical appearances and seductiveness or jokes that are, by their nature, reasonably known to be rude and cause embarrassment, after the person making these statements has been informed that his/her comments are unwelcome.</td>
</tr>
<tr>
<td>d. Touching, hugging or kissing in a culture(s) that does not accept such acts that are reasonable elsewhere.</td>
</tr>
<tr>
<td>e. Requests for sexual favors by an unwelcomed individual who is in a position to bargain.</td>
</tr>
<tr>
<td>f. Engagement in romantic or sexual relationship between physician/ trainees, students, supervisors or patients.</td>
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</tbody>
</table>
those investigations or treatment(s) that are in the best interests of the patients.

- Share the responsibility to improve its performance.
- Reinforce the by-laws, and regulations that are in place at the establishment.

3.2. Physician/Trainee Relationship with Industry

3.2a. Preamble
The physician/trainee must pledge to preserve the fiduciary characteristics of the physician-patient relationship, and non-involvement in any matters that may give rise to a conflict of interest in dealings with industry.

3.2b. Standards
The physician/trainee must pledge to maintain the following in any interaction with industry:

- Collaborate with other members on issues related to health care advancement through teaching and funding research without any compromise of the physician-patient relationship.  
- Conserve professional autonomy  and adhere to scientific evidence in the prescription of any new medication(s).
- Reveal any conflict of interest resulting from interaction with industry to patients, host and audiences involved in educational/research events. 
- Decline any personal rewards from Industry except for educational goods of minimal cash value.

Conclusion and the Scope of this Document
A formal document is now available to all postgraduate trainees (Residents) to emphasize the importance and relevance of professional considerations in Postgraduate Medical Education with a strong sense of obligation to patients’ best interests. We also have added an addendum listing some behavior(s) that are considered unacceptable (Table 1). This document is to serve as a reference source for ethical and professional standards in all UAE Residency programs and as a guide for national and regional usage. Also, we would like to acknowledge that we have not discussed in this document the consequences of breaching the guidelines and the processes that are in place and that can be adapted or need reform for residents’ circumstance. These issues are beyond the scope of this article and need to be addressed as seen appropriate by individual institutes until a unified document can be available.

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