

## **AIM OF THE WORK**

### **General objectives:**

To assess the quality of care provided to pregnant women during their initial visit for ante-natal care at family health units in Alexandria.

### **Specific objectives:**

This research will be conducted to:

- 1- Identify the degree of conformity of physician performance to national guidelines of ante-natal care. ( adequacy of performance).
- 2- Reveal the effect of some relevant factors including job satisfaction of physicians on adequacy of performance.

## **SUBJECTS AND METHODS**

### **I) Research setting:**

The study was implemented in family medicine centers and units in Alexandria governorate (Field work in 2013).

### **II. Study design:**

A cross sectional survey was used in conducting this study.

### **III. Target population:**

All family physicians working in the selected family medicine centers or units in Alexandria constituted the target population of study.

### **IV) Sampling:**

Random sampling technique was used. Three centers or units from each district were chosen randomly (n=24). All physician who worked in those centers were enrolled. A total of one hundred and nineteen (119) family physicians working in different family medicine centers or units in various Alexandria districts were enrolled.

Each physician was observed twice. In some cases, the two observations were done in the same visit. This was possible when there were enough pregnant female attendants for the initial visit of ANC. Otherwise, other visits were paid to the same center or unit till completing the needed number of observations of all physicians in these centers. A minority (5 physicians) were excluded from the final analysis of results as they were no longer working in the chosen centers so it was not possible to have a second observation for them.

The following are the family medicine centers and units where data were collected:

- Montazah district: El Amrawee family health center, El Montazah rural family health unit and Abo keer family health units.
- East district: Hajar El Nauatia family health unit, San Stifano family health centers and Elsiouff family health centers.
- Middle district: Lombroso family health unit, Moharam Bek family health unit and El Hadara Elkebly family health unit.
- El Gomrok district: Elgomork family health unit, El Anfoshy family health unit and El manshia family health unit .
- West ditstrict: El Kabbary family health unit, Karmoz family heath unit and wady El Kamar unit.

- Agmy district :El Dekhila family health unit, El Hanoveel family health unit and El Betash family health unit.
- Amryaa district : Abdelkader family health unit ,Oraby family health unit and Elamryaa family health unit.
- Borg Elarab district: Abo sear family health unit, Borg El Arab New family health unit and Banger El Soker family health unit..

### **V) Tools of data collection:**

1. An inter-view questionnaire was used to collect data from participants. The questionnaire included demographic and job related characteristics of family physicians as name, age, sex, marital states, duration of experience in primary health care , scientific qualification and training programs attended . It took an average of 15 minutes to fill the questionnaire. (Appendix I)
2. A structured self-administered questionnaire was used to collect data from the participants measuring the degree of job satisfaction<sup>(57)</sup>. This questionnaire included the following six areas: general satisfaction state, opportunity to develop, responsibility, relation with patient, time pressure and staff relations.

Total number of statements were 29. Each area contained a group of statements whose responses were graded on a Lickert scale from zero to five (strongly agree, agree, uncertain, disagree and strongly disagree). Maximum score of 5 (i.e most positive) was either given to strongly agree or strongly disagree according to the statement considered. Consequently the maximum total score of satisfaction was 145. The degree of job satisfaction was calculated by the following formula:

$$\text{Satisfaction percentage score} = \frac{\text{physician's score}}{\text{Total score}} \times 100$$

Averages were calculated to yield satisfaction index (SI) for the total state of satisfaction as well as its different areas. In final qualitative analysis of results , these five grades were grouped into three for clarification of ideas ( agree, uncertain and disagree) (Appendix II).

3. An observational check list based on Egypt' national guide lines<sup>(58)</sup> for initial visit of ante natal care was used to measure adequacy of performance by monitoring the degree of conformity of physician performance with these guidelines.

The observational check list included the following seven tasks: history taking, physical examination, investigations ordered, referral, registration and communication (two components: manner i.e body language and voice and delivering health education messages). Totally conforming performance of a certain item of care (fully met) was given a score of 2. Partially conforming performance (partially met) was given a score of 1, while totally unconforming one (not met) was given a score of zero. The maximum total score of the sheet is 154 (appendix III).

Physician percentage performance index (PPI) was calculated by the following formula:

$$\text{PPI} = \frac{\sum \text{observed item scores}}{\sum \text{item maximum scores}} \times 100$$

Averages of PPI were calculated for total score of adequacy as well as those of different tasks of performance to yield mean adequacy score (MAS). The average of the two observations for each physician was calculated and entered in analysis of results. Also, a comparison between the average of each of the two observation rounds was carried out statically to indicate the consistency (stability) of performance.

In percentage distribution of adequacy state (Table 7), the following scheme was followed :

- a- when  $\geq 90\%$  of items were fully met , the task was labeled as fully met.
- b- when 70% to 90% of items were fully met , the task was labeled as partially met.
- c- when less than 70% of items were fully met , the task was labeled as not met.

### **VI. plan for data collection:**

#### **A. Pilot study:**

Pilot study was conducted in order to:

- Assess tools and methods of data collection.
- Estimate time consumed to interview and monitor physicians.
- Direct the researcher on how to organize collection of data.

#### **B. Field work**

The collection of data was carried out by the researcher after obtaining the needed administrative approval. These were obtained from Alexandria faculty of medicine, Ministry of Health in Alexandria Governorate and selected Alexandria family medicine units and centers. On the average 2 field visits were carried out each week. At the end of the interview the researcher made sure that the questionnaire was filled in full and no data are missing.

### **VII Ethical consideration:**

The objectives of the study, the expected benefits and types of information were explained to all participants before the interview to obtain his/ her informed constant. This was carried out starting from the pilot study till the end of data collection Phase.

### **VIII. Handling and analysis of data:**

Data were fed to the computer and analyzed using SPSS software package version 18. Qualitative data were described using numbers and percentages. Quantitative data were described using range (minimum and maximum), mean, standard deviation and median .Statistical tests used were t test, f test and Pearson's correlation coefficient. The chosen level of significance was 5%.

**IX. Time table:**

An approximate of 26 month was needed to carry out the work of this study.

- a) Preparatory phase: This phase covered 8 months and was devoted to the following:
  - Review of literature.
  - Preparing the study questionnaires.
  - Getting permissions from the responsible authorities.
  - Carrying out pilot study.
- b) Data collection phase: This phase covered a period of 8 months.
- C) Analysis and writing up phase: This phase covered a period of 10 months, and was devoted to the following:
  - Tabulation and statistical analysis of data.
  - Reporting and writing of thesis.
  - Submission of thesis for evaluation.

**Time plane:**

Activity	Months						
	1-2	3-4	5-6	7-8	9-16	17-18	19-26
Review of literature	■						
Questionnaire preparation		■					
Permissions			■				
Pilot study				■			
Data collection					■		
Data analysis						■	
Writing thesis							■

**X. Planning for data dissemination:**

After thesis discussion a copy of results and recommendation will be disseminated to the responsible authorities.

## RESULTS

Results of this study will be presented in three sections:

**Section I :** Physicians' demographic and job related characteristics.

**Section II:** Physicians' perception of job satisfaction.

**Section III:** Adequacy of physicians' performance.

### **Section I: Physicians' demographic and job related characteristics.**

#### **1.1. Physicians' work districts : (Table 1)**

Distribution of studied physicians in descending frequency order of their work districts in Alexandria was as follows:

Both Borg El-Arab and East areas' centers contributed to the sample by 18 physicians (15.1%), 17 physicians (14.3%) came from El-Gomrok while each of Middle and El-Montazah areas provided 15 physicians (12.6%). The last three areas were El-Agamy, El-Aamria and West areas with the following percentages: 11.8%, 9.2% and 9.2% respectively.

**Table (1): Distribution of physicians according to their work districts in Alexandria governorate (n = 119).**

Districts	No.	%
Borj –El Arab	18	15.1
East	18	15.1
El Gomork	17	14.3
Middle	15	12.6
El Montazah	15	12.6
EL Agamy	14	11.8
EL Aamria	11	9.2
West	11	9.2
<b>Total</b>	<b>119</b>	<b>100.0</b>

**1.2. Age and Sex: (Table 2)**

The majority were females 97 (81.5%). The rest were males 22 (18.5%). Subject 'ages ranged between 25-59 years with mean of 33.66 years  $\pm$  9.12 and a median age of 30 years. 48 physicians (40.4%) were aged below 30 years, 45 (37.8%) had their age range between 30 < 40 years, 26 (21.8%) physicians in the average range from 40 to above 50 years.

**1.3. Marital status: (Table 2)**

About one quarter of physician' sample 30 (25.2%) were single, while 89 (74.8%) were married.

**Table (2): Distribution of physicians according to demographic characteristic (n = 119).**

<b>Demographic characteristic</b>	<b>No.</b>	<b>%</b>
<b>Sex</b>		
Male	22	18.5
Female	97	81.5
<b>Age (years)</b>		
<30	48	40.4
30 - < 40	45	37.8
40 - $\geq$ 50	26	21.8
Min. - Max.	25.0 – 59.0	
Mean $\pm$ SD	33.66 $\pm$ 9.12	
Median	30.0	
<b>Marital status</b>		
Single	30	25.2
Married	89	74.8

**1.4.Duration of experience: (Table 3)**

The duration of experience in field of primary health care ranged between 0.02 – 28 years with a mean of 5.64 years± 5.93 and a median of 4 years. Duration of experience for 63 physicians (52.9%) were < 5 years. For 40 physicians (33.7%) it ranged between 5-10 years, six physicians (5.0%) had a duration of experience ranging between 10-15 years. The rest (10 physicians 8.4%) had such experience for 15 years or more.

**1.5.Scientific qualifications: (Table 3)**

The highest percentage was of those holding MB BCH (70, 58.8%). The rest had either a diploma (24, 20.2%) or master degree (25, 21.0%).

**1.6.Training programs: (Table 3)**

More than half of physicians had attended training program (69, 58.0%), while the rest (50, 42.0%) had no such opportunity. The number of programs ranged between 1-11 with a mean of 2.43 ± 1.93 program and the median was 2 programs .

**Table (3): Distribution of physicians according to job related characteristic (n = 119).**

<b>Job related characteristics</b>	<b>No.</b>	<b>%</b>
<b>Duration of experience (years)</b>		
<5	63	52.9
5 – 10	40	33.7
10 – 15	6	5.0
>15	10	8.4
Min. - Max.	0.02 – 28.0	
Mean ± SD	5.64 ± 5.93	
Median	4.0	
<b>Scientific qualifications</b>		
MB BCH	70	58.8
Diploma	24	20.2
Master	25	21.0
<b>Training programs</b>		
No	50	42.0
Yes	69	58.0
Min. - Max.	1– 11	
Mean ± SD	2.43 ± 1.93	
Median	2.0	

## **Section II: Physicians' perception of job satisfaction:**

### **2.1. Distribution of physicians' perception in different areas of job satisfaction:(Table 4)**

Physician's perception of job satisfaction was assessed by a total of 29 statements distributed in 6 areas. Percentages of responses denoting uncertain perception occupied the lowest position of percentages in the majority of individual statements (n=24), only in 5 statements (no 3,9,11,16 and17) the uncertain response occupied the middle percentage position.

On the other hand, responses denoting positive perception towards the statement (wether this was indicated by a response of agree or disagree) got the highest percentage in 19 out of the 29 statements.

The rest of highest percentage positions (n=10) were occupied by responses denoting negative perceptions. Five out of these 10 negative responses were found in the statements about ideas of personal growth and opportunity to develop (statements 4, 9, 10, 12 and 13). Other 2 of these highest percentage of negative responses were related to ideas of money shortage (statement 3 and 11).Moreover, 2 highest percentage of negative responses were related to time pressure (statement 20 and 22). The tenth statement that had the highest percentage for negative responses was related to management style (statement 29).

**Table (4): Distribution of physicians' perception in different areas of job satisfaction (n=119).**

Job satisfaction statements	Agree		Uncertain		Disagree	
	No.	%	No.	%	No.	%
<b>General satisfaction</b>						
1. If I could choose the career again I would make the same decision	79	66.4	10	8.4	30	25.2
2. My job has more advantages than disadvantages	56	47.1	13	10.9	50	42
3. My income is a reflection of the work I do	5	4.2	11	9.2	103	86.6
4. There is no personal growth in my work	69	58	17	14.3	33	27.7
5. I would like to change my career	33	27.7	31	26.1	55	46.2
6. I really enjoy my work	47	39.5	30	25.2	42	35.3
7. In general I am satisfied with my work	49	41.2	27	22.7	43	36.1
<b>Opportunity to develop</b>						
8. I have sufficient opportunity to develop in my work	54	45.4	24	20.2	41	34.5
9. The variation in my work is satisfactory	25	21	28	23.5	66	55.5
10. My work is mentally stimulating	39	32.8	18	15.1	62	52.1
11. I experience frustration in my work due to limited resources	98	82.4	15	12.6	6	5.0
12. I find my work routine non stimulating	92	77.3	9	7.6	18	15.1
13. Too much is expected from me at work	73	61.3	18	15.1	28	23.5
<b>Responsibility</b>						
14. I enjoy the status in the community as a healthcare professional	66	55.5	25	21.0	28	23.5
15. I receive recognition for tasks well done	53	44.5	32	26.9	34	28.6
16. I am entrusted with great responsibility in my work	65	54.6	29	24.4	25	21.0

**Results**

**Table (4): Distribution of physicians' perception in different areas of job satisfaction (n=119) “continue”.**

Job satisfaction	Agree		Uncertain		Disagree	
	No.	%	No.	%	No.	%
<b>Relation with patient</b>						
17. The patients appreciate what I do for them	64	53.8	33	27.7	22	18.5
18. I have sufficient time for each patient	77	64.7	8	6.7	34	28.6
19. My patients co-operate because they understand my working conditions	49	41.2	33	27.7	37	31.1
<b>Time pressure</b>						
20. There are many non-clinical tasks that I have to do	101	84.9	7	5.9	11	9.2
21. I have enough freedom to decide how I do my work	49	41.2	33	27.7	37	31.1
22. I spend more time doing what could be done by others with less experience & training	92	77.3	10	8.4	17	14.3
<b>Staff relations</b>						
23. I have a good working relation with my colleagues	100	84.0	8	6.7	11	9.2
24. There is an atmosphere of co-operation between staff & management	61	51.3	27	22.7	31	26.1
25. There is a clear channel of communication at my workplace	50	42.0	32	26.9	37	31.1
26. My manager is concerned about my well being	51	42.9	25	21.0	43	36.1
27. Management does involve staff in decision making	53	44.5	25	21.0	41	34.5
28. I can depend on my colleagues for support	67	56.3	15	12.6	37	31.1
29. I am happy with the management style in my department	35	29.4	24	20.2	60	50.4

**2.2. Physicians' SI in different areas : (Table 5).**

The total SI ranged between 8.62 and 87.93%. The SI ranged between 0 and 100 % in all areas of perceived job satisfaction except that related to opportunity to develop where it ranged between 0 and 83.33%.

The mean total SI was 48.41% ±19.15. Three areas had mean SI above 50%. These were responsibility, relation with patient and staff relation ,with the following values:63.59 %± 31.59, 63.69%± 31.14 and 59.42 % ± 31.56 respectively.

The other three examined areas of perceived job satisfaction had the following descending gradient: general satisfaction, opportunity to develop and time pressure. Their SIs were 47.24 % ± 28.21, 31.65 % ± 21.80 and 28.57 % ± 22.46 respectively.

**Table (5): Mean of physicians' SI in different areas.**

<b>Job satisfaction areas</b>	<b>Mean % score</b>
<b>General satisfaction</b>	
Min. – Max.	0.0 – 100.0
Mean ± SD	47.24 ± 28.21
<b>Opportunity to develop</b>	
Min. – Max.	0.0 – 83.33
Mean ± SD	31.65±21.80
<b>Responsibility</b>	
Min. – Max.	0.0-100.0
Mean ± SD	63.59±31.59
<b>Relation with patient</b>	
Min. – Max.	0.0-100.0
Mean ± SD	63.69±31.14
<b>Time pressure</b>	
Min. – Max.	0.0-100.0
Mean ± SD	28.57±22.46
<b>Staff relations</b>	
Min. – Max.	0.0-100.0
Mean ± SD	59.42±31.56
<b>Total Satisfaction score (SI)</b>	
Min. – Max.	8.62-87.93
Mean ± SD	48.41±19.15

### **2.3. Physicians' SI according to demographic and job related characteristics: (Table 6)**

#### **2.3.1. Age:**

Oldest age physicians obtained the highest mean SI in different areas and total SI: opportunity to develop (41.15%±23.47), responsibility (71.88% ± 28.36), relation with patient (70.83% ± 28.22), time pressure (34.37%±20.61), staff relation (61.16 %± 34.79) and total SI (52.91 %± 22.43). This was with one exception in the area of general satisfaction where the highest score was for the youngest age (49.26% ± 25.91). However the differences were insignificant in all areas as well as the total SI.

#### **2.3.2. Sex:**

Females had higher mean SI in 4 out of 6 areas as well as the total SI . Namely, these areas were general satisfaction (50.66%±27.08), responsibility (64.26%±30.52), time pressure (29.73%±23.84) and staff relations (59.94%±30.51). However the differences were statistically insignificant except in the area of general satisfaction where  $t=2.864$  and  $p=0.005$ .

#### **2.3.3. Marital status:**

Married physicians had high mean SI in different areas of job satisfaction as well as total SI except for that in the area of time pressure where single physicians obtained a higher mean SI (31.11% ± 22.20 and 27.72% ± 22.61 for single and married respectively). However, the differences were statistically insignificant in all associations.

#### **2.3.4. Duration of experience:**

The highest SI was for the longest duration of experience in the both areas of general satisfaction and relation with patient (56.43 % ±27.24) and (70.0%±26.99) respectively. Duration of experience in the range between 10-15 years had the highest mean SI in the other four areas as well as the total SI, namely; opportunity to develop (51.39%±20.69), responsibility (75.0%±39.09), time pressure (33.33%±29.81), staff relations (75.81%±37.43) and total SI (59.48%±27.90) respectively. However the differences were statistically insignificant in all associations.

#### **2.3.5. Scientific qualifications:**

Physicians holding a diploma degree had the highest mean SI in all areas as well as total SI except those of areas of responsibility and time pressure where the highest SI were those of physicians holding a master degree (70.67% ± 28.58) and (33.33 %±25.00) respectively.

The differences were statistically significant in the area of opportunity to develop as well as that of total SI ( $f= 5.771$   $P= 0.004$  and  $f= 4.158$  and  $P= 0.018$ ) respectively.

#### **2.3.6. Training Programs:**

The attendants of training programs had higher mean SI compared to non attendants in all areas of job satisfaction with no exception, as well as in total SI.

## ***Results***

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The differences were statistically significant in both general satisfaction area and total SI ( $t= 2.584$ ,  $p= 0.011$  and  $t= 2.636$  and  $p= 0.010$  respectively).

Table (6): Mean of physicians' SI in different areas according to demographic and job related characteristic (n = 119).

Characteristic	Satisfaction areas						Total Satisfaction score (SI)
	General satisfaction	Opportunity to develop	Responsibility	Relation with Patient	Time pressure	Staff relations	
<b>Age (years)</b>							
<30	49.26 ± 25.91	27.95 ± 18.87	61.46 ± 31.16	65.97 ± 33.15	26.74 ± 18.75	60.57 ± 31.15	48.24 ± 16.48
30 - < 40	45.58 ± 30.26	32.12 ± 23.15	63.03 ± 32.98	59.39 ± 30.05	28.48 ± 25.79	57.92 ± 31.49	47.24 ± 20.43
40 - ≥ 50	46.88 ± 28.92	41.15 ± 23.47	71.88 ± 28.36	70.83 ± 28.22	34.37 ± 20.61	61.16 ± 34.79	52.91 ± 22.43
<b>F(p)</b>	0.216 (0.806)	2.270 (0.108)	0.664 (0.517)	1.074 (0.345)	0.691 (0.503)	0.116 (0.890)	0.542 (0.583)
<b>Sex</b>							
Male	32.14 ± 28.72	32.95 ± 24.60	60.61 ± 36.57	65.15 ± 31.25	23.48 ± 14.23	57.14 ± 36.55	43.81 ± 20.10
Female	50.66 ± 27.08	31.36 ± 21.24	64.26 ± 30.52	63.23 ± 31.27	29.73 ± 23.84	59.94 ± 30.51	49.45 ± 18.87
<b>t(p)</b>	2.864* (0.005*)	0.309 (0.758)	0.488 (0.626)	0.260 (0.795)	1.179 (0.241)	0.374 (0.709)	1.250 (0.214)
<b>Marital status</b>							
Single	43.10 ± 28.23	26.11 ± 22.29	60.0 ± 31.74	61.67 ± 35.87	31.11 ± 22.20	54.76 ± 36.92	44.83 ± 17.97
Married	48.64 ± 28.22	33.52 ± 21.43	64.79 ± 31.63	64.23 ± 29.58	27.72 ± 22.61	61.0 ± 29.61	49.61 ± 19.48
<b>t(p)</b>	0.930 (0.354)	1.621 (0.108)	0.717 (0.475)	0.389 (0.698)	0.715 (0.476)	0.838 (0.407)	1.186 (0.238)
<b>Duration of experience</b>							
<5	47.73 ± 27.87	30.56 ± 19.74	61.90 ± 31.60	64.81 ± 31.70	31.22 ± 21.27	60.43 ± 32.02	48.77 ± 18.07
5 - 10	43.04 ± 27.81	29.58 ± 23.41	64.17 ± 31.93	60.0 ± 32.20	23.33 ± 22.58	55.89 ± 31.98	45.26 ± 19.54
10 - 15	54.76 ± 37.43	51.39 ± 20.69	75.0 ± 39.09	63.89 ± 28.71	33.33 ± 29.81	75.81 ± 37.43	59.48 ± 27.90
>15	56.43 ± 27.24	35.0 ± 25.09	65.0 ± 28.81	70.0 ± 26.99	30.0 ± 24.60	58.57 ± 24.23	52.07 ± 18.12
<b>F(p)</b>	0.794 (0.499)	1.937 (0.128)	0.326 (0.807)	0.345 (0.793)	1.123 (0.343)	0.600 (0.616)	1.164 (0.327)
<b>Scientific qualifications</b>							
MBBCH	44.39 ± 29.76	26.19 ± 19.98	58.81 ± 33.06	61.67 ± 31.13	26.19 ± 21.90	54.49 ± 32.06	44.46 ± 18.98
Diploma	56.55 ± 23.26	39.58 ± 22.69	70.14 ± 28.65	75.0 ± 27.36	30.56 ± 21.23	67.56 ± 27.38	56.32 ± 17.66
Master	46.29 ± 27.13	39.33 ± 21.98	70.67 ± 28.58	58.0 ± 33.03	33.33 ± 25.00	65.43 ± 32.39	51.86 ± 18.64
<b>F(p)</b>	1.699 (0.187)	5.771* (0.004*)	1.977 (0.143)	2.191 (0.116)	1.050 (0.353)	2.146 (0.122)	4.158* (0.018*)
<b>Training programs</b>							
No	39.57 ± 27.35	28.0 ± 21.21	57.0 ± 31.60	60.0 ± 33.50	25.0 ± 19.99	54.14 ± 33.29	43.10 ± 18.80
Yes	52.80 ± 27.70	34.30 ± 21.98	68.36 ± 30.94	66.18 ± 29.28	31.16 ± 23.90	63.25 ± 29.91	52.25 ± 18.59
<b>t(p)</b>	2.584* (0.011*)	1.566 (0.120)	1.959 (0.052)	1.070 (0.287)	1.484 (0.140)	1.563 (0.121)	2.636* (0.010*)

F: F test (ANOVA)

t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

## **Section III: Adequacy of physicians' performance**

### **3.1. Percentage distribution of adequacy of physicians' performance in different tasks . (Table7)**

#### **3.1.1. History taking:**

The highest percentage of physicians' monitoring (57.5%) were in the fully met category, followed by those in the partially met one(39.8%). A minority was found in the not met category(2.7%).

#### **3.1.2. Physical examination :**

The vast majority of results of physicians' monitoring in this task of performance was found either in the partially met (83.2%) or the fully met states (16.0%).

#### **3.1.3. Investigations ordered :**

Monitoring of physicians in this task were totally distributed between about three fifths in the partially met state (58.0%) and two fifths in the fully met state(42.0%).

#### **3.1.4. Referral :**

The majority of observed physicians' performance fully met the requirement in this task (86.6 %).

#### **3.1.5. Registration:**

The highest percentage of observations of physicians was in the fully met result in this task (92.4%) .

#### **3.1.6. Educational messages:**

The highest percentage of observations of physicians was in the fully met result (68.1%). The second highest percentage was in the partially met state (30.3%).

#### **3.1.7. Manner:**

The highest percentage of observations of physicians was in the fully met result (65.6%). The second highest percentage was in the partially met state (33.6%).

## Results

Table (7): Percentage distribution of physicians in different performance tasks (n=119).

Performance tasks	Not met		Partially met		Fully met	
	No.	%	No.	%	No.	%
A). History taking	3	2.7	47	39.8	68	57.5
B). Physical examination	1	0.8	99	83.2	19	16.0
C). Investigations ordered	0	0.0	69	58.0	50	42.0
D). Referral	3	2.5	13	10.9	103	86.6
E). Registration	0	0.0	9	7.6	110	92.4
F). Educational messages	2	1.7	36	30.3	81	68.1
G). Manner	1	0.8	40	33.6	78	65.6

**3.2 MAS of physicians' performance in different tasks: (Table 8)**

Ranges of MAS were wide in different tasks, from a maximum range of 0 to 100% in the task of delivering educational messages to a minimum of 50 – 100% in the tasks of investigations ordered, referral, registration and manner.

The MAS of physician performance comprising all tasks was (79.52%±12.31). The lowest MAS in different tasks was that of physical examination(55.62%±12.56). The Highest MAS were that of registration(96.22%± 13.78) and referral (95.62% ± 12.44). The values of MAS for other tasks were as follows: history taking (75.06 ± 15.19), Investigations ordered (72.50% ± 23.06), educational messages (75.94% ± 24.01) and manner (84.69%±20.47) .

**Table (8): MAS of physicians' performance in different tasks.**

<b>Performance tasks</b>	<b>Min. – Max.</b>	<b>Mean ± SD</b>
<b>History taking</b>	20.0 – 100.0	75.06 ± 15.19
<b>Physical Examination</b>	25.0 – 100.0	55.62 ± 12.56
<b>Investigations ordered</b>	50.0 – 100.0	72.50 ± 23.06
<b>Referral</b>	50.0 – 100.0	95.62 ± 12.44
<b>Registration</b>	50.0 – 100.0	96.22 ± 13.78
<b>Educational messages</b>	0.0 – 100.0	75.94 ± 24.01
<b>Manner</b>	50.0 – 100.0	84.69 ± 20.47
<b>Total adequacy score</b>	29.17 – 100.0	79.52±12.31

### **3.3. Consistency of performance (Table 9):**

Task of referral had a significantly higher MAS in the second observation compared to the first one (  $99.37\% \pm 5.59$  &  $91.87\% \pm 23.12$  respectively and  $t= 2.963$  &  $p= 0.004$  )

All other tasks of performance - except registration and manner- had significantly higher MAS in first observation of physicians than that in second observation: History taking ( $t=5.672$ & $p<0.001$ ), physical examination ( $t=3.779$ & $p<0.001$ ), investigations ordered ( $t=2.375$ & $p=0.020$ ), educational messages ( $t=3.228$ & $p=0.002$ ) and total observation ( $t=6.242$ & $p<0.001$ )

Registration and Manner of physicians were the only two tasks of performance that had insignificant difference between a higher MAS in first observation of physicians compared to the second one( $94.38\% \pm 15.90$  &  $93.75 \pm 16.67$  and  $t=1.000$ ,  $p=0.320$ ) and ( $86.88\% \pm 22.14$  &  $82.50\% \pm 24.00$  and  $t=1.834$  &  $p= 0.070$ ) respectively.

## Results

**Table (9): Comparison between MAS in first and second observation rounds in different tasks.**

Performance tasks	1 <sup>st</sup> observation	2 <sup>nd</sup> observation	t	p
	% score	% score		
<b>History taking</b>				
Min. – Max.	0.0 – 100.0	30.0 – 100.0	5.672*	<0.001*
Mean ± SD	79.75 ± 19.81	70.37 ± 13.35		
<b>Physical Examination</b>				
Min. – Max.	0.0 – 100.0	50.0 – 100.0	3.779*	<0.001*
Mean ± SD	60.0 ± 21.64	51.25 ± 7.86		
<b>Investigations ordered</b>				
Min. – Max.	50.0 – 100.0	50.0 – 100.0	2.375*	0.020*
Mean ± SD	75.0 ± 25.16	70.0 ± 24.65		
<b>Referral</b>				
Min. – Max.	0.0 – 100.0	50.0 – 100.0	2.963*	0.004*
Mean ± SD	91.87 ± 23.12	99.37 ± 5.59		
<b>Registration</b>				
Min. – Max.	50.0 – 100.0	50.0 – 100.0	1.000	0.320
Mean ± SD	94.38±15.90	93.75 ± 16.64		
<b>Educational messages</b>				
Min. – Max.	0.0 – 100.0	0.0 – 100.0	3.228*	0.002*
Mean ± SD	81.25 ± 26.86	70.63 ± 29.44		
<b>Manner</b>				
Min. – Max.	50.0–100.0	50.0 – 100.0	1.834	0.070
Mean ± SD	86.88–22.14	82.50 ± 24.0		
<b>Total observation</b>				
Min. – Max.	29.17-100.0	50.0-100.0	6.242*	<0.001*
Mean ± SD	81.46±12.70	74.79±9.33		

t: Paired t-test\*: Statistically significant at  $p \leq 0.05$

### **3.4. MAS of physicians 'performance according to demographic and job related characteristic. (Table10)**

#### **3.4.1. Age :**

There was a constant ascending gradient of MAS with advancing age in all tasks and total MAS except for that of ordering investigation, where the highest MAS was that of physicians whose age ranged between 30-40 years (78.47%±22.48)

The differences were statistically significant in task of educational messages as well as the total MAS where  $f= 5.369$ ,  $p= 0.007$  and  $f=4.848$  &  $p= 0.010$  respectively.

#### **3.4.2. Sex :**

Males had higher MAS in three tasks of performance and total score of observation, namely; history taking(76.94%±14.36), referral (100.0%±0.0) and educational messages (81.94%±16.73). However, the difference was statistically significant only in referral where  $t= 3.199$  and  $p= 0.002$ . Females had higher MAS in the other four tasks. These were physical examination (56.45%±12.75), investigations ordered (74.60%±23.30), registration (96.37%±12.68) as well as manner(86.29%±20.08). However, all the differences were statistically insignificant.

#### **3.4.3. Marital status:**

Married physicians had higher MAS in all tasks of performance and total MAS of observation except for that of referral where single physicians had the higher MAS (96.59% ± 11.69 and 95.26 % ± 12.79 for the single and married respectively).

However, the difference was statistically significant only in task of educational messages ( $t=2.082$  &  $p=0.041$ ).

#### **3.4.4. Duration of experience :**

The highest MAS was that of physicians whose duration of experience ranged between 5-10 in the following tasks: physical examination (60.19%±14.31), referral (97.22%±10.59), manner (87.04%±20.06) and total MAS (81.02%±8.32). In both tasks of history taking and investigations ordered, the highest MAS was that of physicians with experience between 10-15 years: (78.33%±10.33) and (79.17%±24.58) respectively. For registration and educational messages tasks the highest MAS was for those with longest duration of experience (i.e: >15 years) with scores of 100.0±0.0 and 83.33%±17.68 respectively. However, all the differences were statistically insignificant.

#### **3.4.5. Scientific qualifications:**

Physicians holding a master degree had the highest MAS in four tasks and the total MAS of observation: history taking =79.50%±9.72, registration=95.00%±15.39, educational messages =85.00% ± 20.25, Manner =86.25% ± 20.64 and total MAS (81.25% ± 5.93). All these differences were statistically insignificant.

Physicians holding a diploma degree had a significantly higher MAS in the physical examination task (63.89%±17.62) where  $f = 5.644$  and  $p = 0.005$ . Physicians holding a

degree of MBBCH had highest score in the referral task ( $97.02\% \pm 11.32$ ). However, the difference was statistically insignificant where  $f= 0.897$ ,  $p= 0.412$ .

**3.4.6. Attendance of training programs :**

Physicians who attended training programs had the higher MAS compared to those who didn't in all tasks of performance with insignificant differences. Total MAS of observations was higher for attendants compared to non attendants ( $79.95\% \pm 8.55$  and  $74.49 \pm 12.52$  respectively). The difference was statistically significant where  $t=2.177$  and  $p=0.034$ .

Table (10): MAS of physicians' performance in different tasks according to demographic and job related characteristics

characteristic	Performance tasks							Total adequacy score
	History taking	Physical Examination	Investigations ordered	Referral	Registration	Educational messages	Manner	
<b>Age (years)</b>								
<30	72.10 ± 19.53	53.23 ± 10.69	67.74 ± 22.54	93.55 ± 15.77	91.41±18.63	66.13 ± 26.26	83.87 ± 20.96	73.70±13.27
30 - < 40	75.28 ± 11.46	55.56 ± 12.12	78.47 ± 22.48	96.53 ± 10.61	95.83±14.02	79.86 ± 22.22	84.72 ± 20.94	79.34±7.41
40 - ≥ 50	81.54 ± 10.68	61.54 ± 16.51	67.31 ± 23.68	98.08 ± 6.93	96.15±13.87	86.46 ± 12.97	86.54 ± 19.41	83.17±7.39
<b>F(p)</b>	1.813(0.170)	2.060(0.134)	2.268(0.110)	0.775(0.464)	0.773(0.456)	5.369* (0.007*)	0.076(0.927)	4.848*(0.010*)
<b>Sex</b>								
Male	76.94 ± 14.36	52.78 ± 11.79	65.28 ± 21.25	100.0 ± 0.0	86.84±22.62	81.94 ± 16.73	79.17 ± 21.44	75.99±11.75
Female	74.52 ± 15.49	56.45 ± 12.75	74.60 ± 23.30	94.35 ± 13.89	96.37±12.68	74.19± 25.59	86.29 ± 20.08	78.26±10.30
<b>t(p)</b>	0.595(0.554)	1.143(0.262)	1.522(0.132)	3.199*(0.002*)	1.754(0.094)	1.517(0.137)	1.305(0.196)	0.814(0.418)
<b>Marital status</b>								
Single	71.82 ± 17.76	52.27 ± 7.36	71.59 ± 23.52	96.59 ± 11.69	87.50±21.48	67.05 ± 24.86	80.68 ± 23.06	74.71±10.41
Married	76.29 ± 14.07	56.90 ± 13.89	72.84 ± 23.08	95.26 ± 12.79	96.61±12.68	79.31 ± 23.01	86.21 ± 19.41	78.85±10.57
<b>t(p)</b>	1.062(0.296)	1.923(0.059)	0.216(0.830)	0.426(0.672)	1.872(0.072)	2.082* (0.041*)	1.079(0.284)	1.572(0.120)
<b>Duration of experience</b>								
<5	73.95 ± 16.85	53.29 ± 10.35	71.05 ± 22.90	94.08 ± 14.74	91.67±18.44	69.74 ± 26.10	86.18 ± 19.01	75.43±12.22
5 – 10	77.04 ± 14.43	60.19 ± 14.31	74.07 ± 23.49	97.22 ± 10.59	96.30±13.34	82.41 ± 20.59	87.04 ± 20.06	81.02±8.32
10 - 15	78.33 ± 10.33	54.17 ± 18.82	79.17 ± 24.58	95.83 ± 10.21	91.67±20.41	75.0 ± 27.39	66.67 ± 25.82	78.47±10.68
>15	71.67 ± 13.46	52.78 ± 8.33	69.44 ± 24.30	97.20 ± 8.33	100.0±0.0	83.33 ± 17.68	83.33 ± 21.65	77.32±7.76
<b>F(p)</b>	0.453(0.716)	1.864(0.143)	0.303(0.823)	0.385(0.764)	0.928(0.431)	1.843(0.147)	1.802(0.154)	1.515(0.217)
<b>Scientific qualifications</b>								
MBBCH	73.21 ± 17.66	52.98 ± 8.19	67.86 ± 22.28	97.02 ± 11.32	93.60±16.45	70.24 ± 25.45	83.93 ± 19.77	75.24±11.95
Diploma	74.44 ± 13.49	63.89 ± 17.62	79.17 ± 24.63	95.83 ± 9.59	94.44±16.17	79.17 ± 21.44	84.72 ± 22.91	79.75±10.23
Master	79.50 ± 9.72	53.75 ± 12.23	76.25 ± 22.18	92.50 ± 16.42	95.0±15.39	85.0 ±20.52	86.25 ± 20.64	81.25±5.93
<b>F(p)</b>	1.185(0.311)	5.644* (0.005*)	1.911(0.155)	0.897(0.412)	0.055(0.946)	2.903(0.061)	0.085(0.919)	2.711(0.073)
<b>Training programs</b>								
No	72.81 ± 19.0	54.69 ± 13.38	67.97 ± 22.21	92.97 ± 17.08	90.15±19.70	71.09 ± 27.02	82.81 ± 20.52	74.49±12.52
Yes	76.56 ± 11.99	56.25 ± 12.09	75.52 ± 23.34	97.40 ± 7.72	96.88±12.23	79.17 ± 21.47	85.94 ± 20.57	79.95±8.55
<b>t(p)</b>	0.992(0.326)	0.543(0.589)	1.445(0.152)	1.376(0.177)	1.743(0.088)	1.484(0.142)	0.666(0.507)	2.177*(0.034*)

F: F test (ANOVA)

t: Student t-test

\*: Statistically significant at  $p \leq 0.05$

### **3.5. Correlation of MAS of physicians' performance with SI: (Table 11)**

#### **3.5.1. History taking**

MAS in the task of history taking was positively and significantly correlated with SI of the following : opportunity to develop  $r=0.327$ ,  $p=0.003$ , responsibility  $r=0.272$ ,  $p=0.015$ , relation with patient  $r = 0.374$ ,  $p = 0.001$  and total score of satisfaction  $r=0.234$ ,  $p= 0.037$ .

#### **3.5.2. Physical examination :**

MAS in the task of examination was positively and significantly correlated with SI of the following : opportunity to develop  $r=0.280$ ,  $p=0.012$ , relation with patient  $r=0.253$ ,  $p=0.023$  and total score of satisfaction:  $r=0.243$ ,  $p=0.030$ .

#### **3.5.3. Investigation ordered:**

MAS in the task of investigation ordered was not significantly correlated with SI of any area.

#### **3.5.4. Referral :**

The only positive and significant correlation of MAS of task of referral was that with SI of responsibility area where  $r=0.226$ ,  $p=0.044$ .

#### **3.5.5. Registration :**

MAS in the task of registration was negatively and significantly correlated with SI of opportunity to develop where  $r=0.243$ ,  $p=0.029$  and relation with patient where  $r=0.223$ ,  $p=0.045$

#### **3.5.6. Educational messages :**

MAS in the task of educational messages was positively and significantly correlated with SI of both opportunity to develop and responsibility where  $r=0.295$ ,  $p=0.008$  and  $r=0.310$ ,  $p= 0.005$  respectively.

#### **3.5.7. Manner :**

MAS of manner was positively and significantly correlated with SI of relation with patient ( $r = 0.267$ ,  $p = 0.017$ ).

#### **3.5.8. Total MAS :**

The total MAS was positively and significantly correlated with SIs of the following : Opportunity to develop  $r=0.351$ ,  $p=0.001$ , responsibility  $r=0.376$ ,  $p=0.001$ , relation with patient  $r=0.309$ ,  $p=0.005$  and finally total SI  $r =0.295$ ,  $p =0.007$ .

Table (11): Correlation of MAS of physicians' performance with SI.

Performance tasks		satisfaction areas						Total Satisfaction score
		General satisfaction	Opportunity to develop	Responsibility	Relation with Patient	Time pressure	Staff relations	
History taking	r	-0.068	0.327*	0.272*	0.374*	0.023	0.156	0.234*
	p	0.547	0.003	0.015	0.001	0.837	0.167	0.037
Physical Examination	r	0.213	0.280*	0.118	0.253*	-0.069	0.113	0.243*
	p	0.057	0.012	0.296	0.023	0.542	0.320	0.030
Investigation ordered	r	0.123	0.140	0.072	0.004	-0.048	0.135	0.138
	p	0.277	0.216	0.528	0.975	0.670	0.233	0.224
Referral	r	0.004	0.024	0.226*	0.086	-0.101	-0.014	0.043
	p	0.971	0.833	0.044	0.446	0.373	0.903	0.708
Registration	r	-0.045	-0.243*	-0.109	-0.223*	-0.096	-0.083	-0.178
	p	0.691	0.029	0.335	0.045	0.395	0.463	0.113
Educational messages	r	0.046	0.295*	0.310*	0.114	0.016	0.015	0.169
	p	0.686	0.008	0.005	0.313	0.886	0.893	0.134
Manner	r	0.029	0.211	0.202	0.267*	0.100	0.100	0.197
	p	0.800	0.060	0.073	0.017	0.378	0.376	0.080
Total adequacy score	r	0.081	0.351*	0.376*	0.309*	-0.004	0.158	0.295*
	p	0.473	0.001	0.001	0.005	0.974	0.158	0.007

r: Pearson coefficient

\*: Statistically significant at  $p \leq 0.05$