

General practitioners pre and post training knowledge and attitude towards psychiatry

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ABSTRACT

Objectives: General practitioners (GPs) often lack sufficient knowledge of psychiatric diagnoses and have unfavorable attitudes towards mental illness. The first aim of this intervention study is to assess the pre-and post-psychiatric training knowledge and attitudes of GPs. The second aim is to explore certain factors, which predict gain in knowledge and changes in attitude.

Methods: This study was executed at Buraidah Mental Health Hospital in the year 2003. The research design consisted of a pre- and post-test comparison of GPs responses. The instruments were a Knowledge Test and an Attitude Questionnaire.

Results: The psychiatric training had a discernible

impact on GPs' knowledge. Though most of their pre-training attitudes were well-known either as positive or negative, certain attitudes were significantly changed post-intervention. Gain in knowledge was significantly predicted by the type of psychiatric help offered by the GPs. Gender and duration of GPs' practice significantly predicted the attitudinal changes.

Conclusion: Psychiatric training courses significantly enhance GPs' knowledge together with significant changes in certain attitudes that have vast psychiatric implications including destigmatization, early diagnosis and better treatment of primary care patients with mental disorders.

Neurosciences 2004; Vol. 9 (4): 287-294

Psychiatric training courses tend to positively affect general practitioners (GPs') knowledge of psychiatry. A large body of research suggests that they need continuing psychiatric training courses as they have invariably inadequate diagnostic, therapeutic and other skills in psychiatry. Therefore, they often unidentify and misdiagnose the majority of mental patients attending primary health care [PHC].¹ Indeed, insufficient psychiatric knowledge has multiple adverse effects on the delivery of mental health services to PHC attendees who suffer from a variety of common psychiatric disorders, psychopathological subsyndromes, physical

comorbidities, and psychosocial problems.¹⁻³ Notably, for GPs, medically unexplained symptoms or somatoform disorders, comorbid physical diseases and social problems of mental patients pose mainly diagnostic and treatment difficulties at consultation.^{3,4} Certainly, primary care psychiatry is a growing challenge to GPs, more in developing countries than in the industrialized world. They require specific psychiatric competencies for dealing with mental patients with complex psychosocial issues. Moreover, rural community clients with mental disorders are by and large underserved and have low access to specialized

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Received 28th February 2004. Accepted for publication in final form 20th April 2004.

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care⁵ and these trends are likely to be more severe in rapidly developing countries. As for the attitude of GPs, people with mental disorders are often characterized by negative stereotypes coupled with discriminatory behaviors across the world.^{6,9} This attitudinal trend varies globally across cultures. However, intensive global desigmatizing campaigns and specific attitudinal interventions are reported to effect favorable changes and improvement in the attitudes of medical students, health providers, consumers and public towards patients with mental illness.^{6,9} Overall, the trained physicians with healthy attitudes develop strong therapeutic alliance with mental patients and, hence comprehensive interview, correct diagnosis, integrated treatment, regular follow-ups, good compliance and outcome, and reduced level of performance anxiety.^{6,10} Furthermore, health consumers with positive attitudes towards psychiatry could easily accept psychiatric referrals and consultation, in case GPs encounter diagnostic and management difficulties. Likewise, carers and the public with unbiased attitudes towards psychiatric patients could serve them compassionately. Notably, several factors including sociodemographic, namely, age, sex and education, psychographic, namely, personality dynamic, motivation, culture, and social systems and experiential, namely, contacts with patients, specialists, and clerks could predict gain in GPs' knowledge and attitudes towards mental illness.¹¹⁻¹⁶ However, specifically tailored training programs are known to enhance not only their knowledge base but also improve their attitudes towards psychiatry.^{15,16} Furthermore, it is deemed that if psychiatrically trained GPs are delegated specific clinical responsibilities, it could sustain or even enhance their knowledge in psychiatry and their attitudes towards psychiatric patients will improve considerably. This intervention study aims at assessing GPs' pre- and post-training responses on a psychiatric Knowledge Test and an Attitude Questionnaire. It also explores certain factors, which may predict gain in knowledge and changes in attitudes towards people with mental disorders. We hypothesized that a 3-day psychiatric course will considerably enhance their knowledge and will also produce healthy changes in their attitudes towards psychiatry and, certain sociodemographic and experiential factors would predict gain in GPs' knowledge and changes in their attitudes towards psychiatry. Like others researchers,¹⁷ we assessed trainees' attitudes and knowledge independently, as both of them are independent factors.

Methods. Training course. Seventy GPs working at different PHC centers in Al-Qassim region, Kingdom of Saudi Arabia were included in

this study carried out in the year 2003. They were given a 3-day condensed course in psychiatry covering several topics of PHC relevance including rationale of integration of mental health into psychiatry, somatoform disorders, anxiety disorders, mood disorders, substance use disorders, schizophrenia, attention deficit hyperactivity disorders, childhood enuresis, counseling, and finally referral system. Seven consultants who have long clinical experience in psychiatry and medical education adopted different teaching models^{18,19} for imparting relevant information to the trainees who were encouraged to interact throughout the training course with the trainers. The trainees were allowed to interrupt the trainers for clarifying any unclear information and, moreover they were also given ample time post-lecture for detailed open discussion. Each interactive lecture/session lasted for 1-2 hours. Above all, 6 clinical cases were presented to them for intensive discussion on the last day of the course. In addition, 3 mini-workshops, each lasting 30 minutes, were also organized for trainees' interactive participation and discussion on attitudes towards patients with mental illness, mental hospitals and mental health professionals. The deliberations were open and GPs were given ample opportunities to discuss with trainers even the attitudes included in the attitude questionnaire. As expected, GPs were most active throughout and took leading roles in these attitudinal mini-workshops. A Training Manual including questionnaire is available upon request.

Instrument. The Al-Qassim Psychiatric Knowledge Test and Attitude Questionnaire has 3 sections: Sociodemographic and experiential variables. Section 1 contains 16 items, which are: 1. age, 2. gender, 3. marital status, 4. nationality, 5. MBBS which country, 6. post-graduate qualification, 7. psychiatric training, 8. duration of medical practice, 9. personal psychiatric problems, 10. family history of psychiatric problems, 11. confidence dealing with psychiatric problems, 12. contact with psychiatric patients, 13. number of patients seen within the past 6 months, 14. psychiatric help offered, 15. type of help offered and 16. willingness for psychiatric training.

Knowledge test (KT). The KT (section 2) consists of 50-multiple choice questions with 4 alternatives meant for tapping the knowledge of the trainees in 6 domains; organic and substance use disorders, schizophrenia, depression, anxiety, somatoform, and childhood disorder. Here are 2 examples "1. atypical antipsychotics include all except one, a) clozapine, b) risperidone, c) olanzapine, d) haloperidol" and 2. "the treatment of depression include all the following except one, a) antidepressants, b) lithium, c) electroconvulsive therapy and d) diazepam". As

in other recognized surveys,^{20,21} a clinical vignette was used for each domain exception childhood disorder. Questions answered wrongly were scored 0 whereas questions answered correctly were scored 1. So the range of the scores on the KT is 0-50.

Attitude questionnaire (AQ). The AQ (section 3) consists of 34 attitudinal sentences that explore the trainees' opinion in 4 main areas, which are mental hospitals, mental health professionals, mental patients and psychiatric disorders. Here are 2 examples "1. you would like to move next door to a mental patient, a) strongly agree, b) agree, c) don't know, d) disagree, and e) strongly disagree" and "2. the adverse portrayals of mental patients by media have also increased stigma, a) strongly agree, b) agree, c) don't know, d) disagree, and e) strongly disagree". Each attitude sentence had to be answered on a 5-point Likert-type scale: strongly agree (score=2), agree (score=1), don't know (score=0), disagree (score=-1) and strongly disagree (score=-2). So, the range of score on the AQ is -68 to +68. Each trainee was advised to make only one choice. This questionnaire was given to each trainee for completion pre- and post-psychiatric training. Notably, in a pilot testing exercise that recruited 60 subjects (half of them were psychiatrically informed), the revealed reliabilities of KT and AQ were acceptably good (Chronbach's alpha, 0.84 and 0.76).

Statistical analysis. Several statistical tests including frequency distribution, descriptive, paired t-test, McNemar, and logistic regression forward stepwise were used for analyzing the data. For McNemar test analysis, GPs strongly agree and strongly disagree attitudinal responses were pooled with agree and disagree responses. Logistic regression forward stepwise was used to predict the outcome in terms of net gain, for example, post- and pretest scores in knowledge and attitude, based on the independent sociodemographic-experiential variables. The net gain in knowledge (-13 to 34) and attitude (-22 to 20) was split into dichotomous categories, for example, knowledge 11 and 12 and attitude 0 and 1. The chosen cut-off point was derived from cumulative percent, for example, 50% and 51% of the frequency of knowledge score. For attitude, the cut off point was based on negative (0) and positive (1) attitudes. The *p* value of 0.05 or less was considered significant.

Results. Frequency and descriptive statistics. The trainees' mean age (range 27-63) was 40.79 with a standard deviation of 6.98. There were 17 female trainees (24.3%). Other sociodemographic and experiential variables are detailed in Table 1.

Pre- and post-training knowledge. In all knowledge domains, there were significant changes in trainees' knowledge after training intervention

(Table 2). However, there were no significant changes in trainees' certain knowledge items ($p>0.05$). The unaffected questions (Q) were; delirium (Q3), diagnosis of depression (Q19), characteristics of mania (Q23), side-effects of contraceptives (Q30), premenstrual syndrome (Q31), diagnosis of panic attacks (Q33), epidemiology of anxiety disorders (Q37), cognitive-behavior therapy (Q40), treatment of body dysmorphic disorders (Q45) and attention deficit hyperactivity disorder (Q50). Furthermore, paired sample statistics, run for pre-and post-psychiatric training knowledge mean scores revealed significant impact on knowledge ($t=-9.54$, degrees of freedom [df]=69, $p<0.0001$, 95% confidence interval [CI] = -14.37 to -9.39).

Pre- and post-training attitudes. Most of the attitudinal responses of trainees were not significantly changed after psychiatric training (Table 3). However, certain trainees' attitudes (A) were changed negatively ($p<0.05$), which were related to psychiatric staff (A8), discussion of personal psychiatric drugs with friends (A14), and communication and assertiveness of mental patients (A22). With regards to A14, GPs' friends may include psychiatrists, physicians, paramedical staff and others. A frank discussion by GPs of their personal issues such as use of psychotropic medications with psychiatric friends or others may connote different attitudes that is either negative or positive. Some specific attitudes with regard to mental patients (A9) and stigma against mental illnesses (A25) were changed positively ($p<0.05$). The rest of the 29 attitudes [29/34, 85%] were not affected significantly ($p>0.05$). However, 12 of these attitudes mostly indicated GPs' unhealthy beliefs (A2, 4-6, 10-13, pre-training disagree rate ranged from 93-37%) and incorrect responses (A18-20, 23, 28, pre-training disagree rate ranged from 87-59%). These were further enhanced post-training (disagree rates ranged from 97-49% and 87-77%) but insignificantly ($p>0.05$). Conversely, the other 17 attitudes of GPs were markedly positive pre-training and there were further positive but insignificant changes post-psychiatric training ($p>0.05$). Based on GPs' agree/disagree responses to an attitudinal question, attitudes were further divided into saturated (60-70% or more responses) and non-saturated (<60% responses). Notably, paired t-test, run for pre-and post-psychiatric training attitude mean scores showed no significant impact on GPs' attitudes ($t=1.41$, $df=69$, $p=0.165$, 95% CI=-0.72 to 4.15).

Logistic regression model. All 16 sociodemographic and experiential variables were included twice in the logistic regression model separately for predicting net gain in trainees'

Table 1 - Sociodemographic parameters of trainees (n=70).

Variable	n	(%)
Gender		
Male	53	(75.7)
Marital status		
Married	68	(97.1)
Single	2	(9.2)
Nationality		
Non Saudi	29	(41.4)
Arab World	41	(58.6)
MBBS from		
Non Arab World	26	(37.1)
Arab World	44	(62.9)
Postgraduate qualification		
Diploma	21	(30)
MS/MD	7	(10)
Other	5	(7.1)
No	37	(52.9)
Psychiatric training		
Yes	16	(22.9)
No	54	(77.1)
Medical practice		
<5 years	5	(7.1)
5-9 years	9	(12.9)
10-14 years	15	(21.4)
>14 years	41	(58.6)
Personal psychiatric problem		
Yes	10	(14.3)
No	60	(85.7)
Family psychiatric problem		
Yes	12	(17.1)
No	58	(82.9)
Confidence dealing with psychiatric problems		
Not at all	3	(4.3)
A little bit	23	(32.9)
Moderately	24	(34.3)
Quite a bit	11	(15.7)
Extremely	9	(12.9)
Contact with psychiatric patients		
Yes	51	(72.9)
No	19	(27.1)
Number of psychiatric patients seen within the past 6 months		
<24	49	(70)
25 - 50 and more	2	(2.9)
0	19	(27.1)
Psychiatric help offered		
Not at all	19	(27.1)
A little	15	(21.4)
Some	24	(34.3)
A lot	12	(17.1)
Type of help offered		
Counseling	24	(34.3)
Medications	2	(2.9)
Family/friend support	9	(12.9)
Referral to psychiatric clinics	16	(22.9)
Don't know	19	(27.1)
Willingness for psychiatric training		
Strongly willing	36	(51.4)
Unwilling	1	(1.4)
Don't know	3	(4.3)
Willing	30	(42.9)

MBBS - Bachelor of Medicine, MS - Master of Science,
MD - Doctor of Medicine

knowledge and attitudes. Regarding knowledge, type of help offered by GPs survived the model (Wald $2=12.28$, $df=4$, $p<0.05$), which predicted significant gain in knowledge. However, when counseling was considered as a reference variable, then only practice of writing a detailed referral letter to psychiatric consultation significantly predicted the positive gain in knowledge ($B=3.05$, standard error [SE]=0.89, Wald $2=11.68$, $df=1$, $p<0.05$, odds ratio=21.00, 95% CI=3.66-120.37). Obviously, GPs referring patients for psychiatric consultation had 21 times more knowledge than those who only practiced counseling. As for attitudes, gender ($B=-1.9$, $SE=0.78$, Wald $2=5.98$, $df=1$, $p<0.05$, odds ratio=0.15, 95% CI=0.03-0.69) and duration of medical practice (Wald $2=7.48$, $df=3$, $p<0.05$) survived the model. Female gender predicted negative attitude towards psychiatry. When <5 years of medical practice was considered as a reference point, then only medical practice of 10-14 years predicted positive attitude towards psychiatry ($B=2.46$, $SE=1.3$, Wald $2=3.32$, $df=1$, $p<0.05$, odds ratio=11.69, 95% CI=0.83-164.27). Thus, GPs' longer medical practice predicted positive changes in their attitudes towards psychiatry.

Discussion. According to this intervention study, a 3-day structured psychiatric training course was found to have a significant impact on GPs psychiatric knowledge, which is congruous with other national^{15,22} and international studies.²³⁻²⁵ In one study it was found that post-training immediate gain in knowledge and skills persists over time²⁶ and, even may increase with time. On the contrary, King and colleagues found ineffectiveness of teaching GPs skills in brief cognitive behavior therapy to treat patients with depression after 6 months.²⁷ Overall, the trained GPs need regular psychiatric training in order to consolidate their knowledge together with further enhancing other core competencies including patient care, interpersonal and communication skills, practice-based learning and improvement, professionalism, and systems-based practice.^{23,28} The GPs responses to 10 knowledge questions not significantly affected by training could be due to their pre-training saturation of knowledge; correct pretraining responses ranged from 41-89%. This finding supports the notion that probably training is unlikely to produce significant changes in trainees' knowledge if they already have sufficient baseline knowledge about a particular topic.²⁹

In contrast to knowledge, only certain significant attitudinal changes were noticed in both negative and positive stereotypes towards mental illness, which is compatible with our previous research.¹⁶ For example, the attitude A8 changed negatively and thus, GPs endorsed the negative views that people not only avoid mixing mental patients but

Table 2 - Pre and post training knowledge (K) of general practitioners (n=70).

Question serial no.	Domains*	Pre-Training K Correct (%)	Post-Training K Correct (%)	p value Exact sign. [2-sided]
Q1	Diagnosis of dementia	47 (67.1)	59 (84.3)	0.017
Q2	Features of dementia	53 (75.7)	66 (94.3)	0.002
Q3	Features of delirium	44 (62.9)	48 (68.6)	0.541 (NS)
Q4	Drugs and organic brain syndrome	25 (35.7)	54 (77.1)	0.0001
Q5	Criteria of addiction	39 (55.7)	60 (85.7)	0.0001
Q6	Schizophrenia-like-psychosis	18 (25.7)	44 (62.9)	0.0001
Q7	Diagnosis of schizophrenia	35 (50)	61 (87.1)	0.0001
Q8	Features of schizophrenia	53 (75.7)	69 (98.6)	0.0001
Q9	Nature of schizophrenia	22 (31.4)	51 (72.9)	0.0001
Q10	Symptoms of psychosis	47 (67.1)	67 (95.7)	0.0001
Q11	Positive symptoms of schizophrenia	51 (72.9)	62 (88.6)	0.027
Q12	Etiologies of schizophrenia	21 (30)	36 (51.4)	0.006
Q13	CNS neurotransmitters	53 (75.7)	63 (90)	0.041
Q14	Prognosis of schizophrenia	29 (41.4)	43 (61.4)	0.020
Q15	Treatment of schizophrenia	55 (78.6)	66 (94.3)	0.007
Q16	Atypical antipsychotics	26 (37.1)	45 (64.3)	0.001
Q17	Lactorrhea and antipsychotics	48 (68.6)	61 (87.1)	0.011
Q18	Adverse effects of psychotropics	45 (64.3)	66 (94.3)	0.0001
Q19	Diagnosis of depression	56 (80)	64 (91.4)	0.057 (NS)
Q20	Features of depression	48 (68.6)	60 (85.7)	0.008
Q21	Causes of suicide	59 (84.3)	68 (97.1)	0.004
Q22	Nature of depression	36 (51.4)	50 (71.4)	0.020
Q23	Features of mania	59 (84.3)	64 (91.4)	0.302 (NS)
Q24	Etiologies of depression	19 (27.1)	42 (60)	0.0001
Q25	Drugs and depression	22 (31.4)	40 (57.1)	0.0001
Q26	Thyroid and depression	29 (41.4)	44 (62.9)	0.014
Q27	Treatment of depression	31 (44.3)	50 (71.4)	0.0001
Q28	Selective serotonin reuptake inhibitors	33 (47.1)	49 (70)	0.009
Q29	Selective serotonin reuptake inhibitors	41 (58.6)	57 (81.4)	0.005
Q30	Effects of contraceptive use	43 (61.4)	51 (72.9)	0.152 (NS)
Q31	Premenstrual syndrome	53 (75.7)	56 (80)	0.664 (NS)
Q32	Postpartum blues	22 (31.4)	39 (55.7)	0.002
Q33	Diagnosis of panic disorder	52 (74.3)	59 (84.3)	0.167 (NS)
Q34	Comorbidity of panic	18 (25.7)	33 (47.1)	0.008
Q35	Causes of panic attacks	29 (41.4)	45 (64.3)	0.007
Q36	Anxiety disorders	51 (72.9)	63 (90)	0.012
Q37	Nature of anxiety disorders	29 (41.4)	37 (52.9)	0.229 (NS)
Q38	Obsessive-compulsive disorder	41 (58.6)	55 (78.6)	0.009
Q39	Treatment of anxiety disorders	38 (54.3)	53 (75.7)	0.008
Q40	Cognitive-behavior therapy	34 (48.6)	43 (61.4)	0.175 (NS)
Q41	Body dysmorphic disorder	29 (41.4)	51 (72.9)	0.0001
Q42	Somatoform disorders	42 (60)	56 (80)	0.013
Q43	Nature of somatoform disorders	25 (35.7)	49 (70)	0.0001
Q44	Types of somatoform disorders	31 (44.3)	58 (82.9)	0.0001
Q45	Treatment of somatoform disorders	34 (48.6)	45 (64.3)	0.099 (NS)
Q46	Attention deficit hyperactivity disorder	37 (52.9)	59 (84.3)	0.0001
Q47	Features of ADHD	37 (52.9)	62 (88.6)	0.0001
Q48	Treatment of enuresis	51 (72.9)	67 (95.7)	0.0001
Q49	DSM-IV- classification	33 (47.1)	65 (92.9)	0.0001
Q50	Evaluation of ADHD	62 (88.6)	68 (97.1)	0.109 (NS)

*Organic and substance use disorder (Q1-Q6), schizophrenia (Q7-Q18), depression (Q19-Q32), anxiety (Q33-Q40), somatoform disorder (Q41-Q45), and childhood disorder (Q46-Q50), CNS - central nervous system, ADHD - attention deficit-hyperactivity disorder, DSM-IV - Diagnostic and Statistical Manual [of Mental Disorders] 4th Edition, sign. - significance, NS - not significant

Table 3 - Pre- and post-training attitudes [A] of general practitioners (n=70).

Attitude title	Pre-Training A				Post-Training A				p value Exact sign. [2-sided]				
	D _{Ag}	(%)	DNK	(%)	A	(%)	D _{Ag}	(%)		DNK	(%)	A	(%)
A. Significant positive changes in attitudes													
1. Marriage to a mental patient (A9)	27	(38.6)	9	(12.9)	34	(48.6)	16	(22.9)	5	(7.1)	49	(70)	0.009 S
2. Stigma and self-interest (A25)	17	(24.3)	20	(28.6)	33	(47.1)	10	(14.3)	9	(12.9)	51	(72.9)	0.01 S
B. Significant negative changes in attitudes													
3. Talking to psychiatrists (A8)	45	(64.3)	8	(11.4)	17	(24.3)	62	(88.6)	4	(5.7)	4	(5.7)	0.001 S
4. Psychotropics and stigma (A14)	29	(41.4)	4	(5.7)	37	(52.9)	46	(65.7)	1	(1.4)	23	(32.9)	0.003 S
5. Assertiveness and mental patient (A22)	47	(67.1)	5	(7.1)	18	(25.7)	57	(81.4)	3	(4.3)	10	(14.3)	0.03 S
C. No significant changes in the saturated attitudes													
6. Views about mental hospital (A2)	62	(88.6)	6	(8.6)	2	(2.9)	66	(94.3)	4	(5.7)	-	-	0.29 NS
7. Closure of mental hospital (A4)	61	(87.1)	4	(5.7)	5	(7.1)	64	(91.4)	3	(4.3)	3	(4.3)	0.58 NS
8. Stigma against psychiatrists (A5)	65	(92.9)	5	(7.1)	-	-	68	(97.1)	2	(2.9)	-	-	0.45 NS
9. Severity of mental disorder (A18)	59	(84.3)	-	-	11	(15.7)	60	(85.7)	-	-	10	(14.3)	1.00 NS
10. Chronicity of mental disorder (A19)	57	(81.4)	4	(5.7)	9	(12.9)	61	(87.1)	1	(1.4)	8	(11.4)	0.58 NS
11. Prognosis of mental disorder (A20)	61	(87.1)	2	(2.9)	7	(10)	61	(87.1)	1	(1.4)	8	(11.4)	1 NS
12. Faith healers and mental disorder (A28)	54	(77.1)	5	(7.1)	11	(15.7)	61	(87.1)	3	(4.3)	6	(8.6)	0.21 NS
13. Admission to mental hospital (A3)	3	(4.3)	19	(27.1)	48	(68.6)	6	(8.6)	12	(17.1)	52	(74.3)	0.5 NS
14. Drug development (A15)	5	(7.1)	2	(2.9)	63	(90)	2	(2.9)	3	(4.3)	65	(92.9)	0.73 NS
15. Etiologies of mental disorder (A16)	1	(1.4)	1	(1.4)	68	(97.1)	1	(1.4)	2	(2.9)	67	(95.7)	1 NS
16. Culture and mental disorders (A17)	2	(2.9)	8	(11.4)	60	(85.7)	4	(5.7)	5	(7.1)	61	(87.1)	1 NS
17. Destigmatization (A21)	8	(11.4)	6	(8.6)	56	(80)	3	(4.3)	4	(5.7)	63	(90)	0.08 NS
18. Laws, customs and stigma (A24)	8	(11.4)	5	(7.1)	57	(81.4)	6	(8.6)	8	(11.4)	56	(80)	1 NS
19. Stigma and mental disorder (A27)	5	(7.1)	8	(11.4)	57	(81.4)	5	(7.1)	4	(5.7)	61	(87.1)	0.48 NS
20. Productivity and mental patients (A29)	12	(17.1)	3	(4.3)	55	(78.6)	12	(17.1)	-	-	58	(82.9)	0.43 NS
21. Creativity and mental patients (A30)	23	(32.9)	2	(2.9)	45	(64.3)	34	(48.6)	4	(5.7)	32	(45.7)	0.15 NS
22. Fear of mental disorder (A33)	11	(15.7)	3	(4.3)	56	(80)	8	(11.4)	2	(2.9)	60	(85.7)	0.39 NS
23. Interpersonal conflicts (A34)	8	(11.4)	7	(10)	55	(78.6)	9	(12.9)	6	(8.6)	55	(78.6)	0.82 NS
D. No significant changes in the non-saturated attitudes													
24. Work in a mental hospital (A1)	22	(31.4)	8	(11.4)	40	(57.1)	17	(24.3)	5	(7.1)	48	(68.6)	0.14 NS
25. Work affects psychiatrists (A6)	40	(57.1)	10	(14.3)	20	(28.6)	51	(72.9)	10	(14.3)	9	(12.9)	0.1 NS
26. Causes of stigma (A7)	17	(24.3)	15	(21.4)	38	(54.3)	18	(25.7)	2	(2.9)	50	(71.4)	0.18 NS
27. Living near a mental patient (A10)	26	(37.1)	15	(21.4)	29	(41.4)	36	(51.4)	5	(7.1)	29	(41.4)	0.41 NS
28. Socialization and a mental patient (A11)	38	(54.3)	5	(7.1)	27	(38.6)	44	(62.9)	4	(5.7)	22	(31.4)	0.49 NS
29. Friendship with a mental patient (A12)	40	(57.1)	5	(7.1)	25	(35.7)	46	(65.7)	4	(5.7)	20	(28.6)	0.19 NS
30. Work near a mental patient (A13)	27	(38.6)	9	(12.9)	34	(48.6)	34	(48.6)	9	(12.9)	27	(38.6)	0.56 NS
31. Clarity of mental disorder (A23)	41	(58.6)	3	(4.3)	26	(37.1)	54	(77.1)	-	-	16	(22.9)	0.07 NS
32. Stigma and mass media (A26)	13	(18.6)	17	(24.3)	40	(57.1)	9	(12.9)	16	(22.9)	45	(64.3)	0.44 NS
33. Reproduction and mental patients (A31)	19	(27.1)	10	(14.3)	41	(58.6)	22	(31.4)	3	(4.3)	45	(64.3)	0.69 NS
34. Mental disorder most stigmatized (A32)	25	(35.7)	10	(14.3)	35	(50)	22	(31.4)	5	(7.1)	43	(61.4)	0.27 NS
<p>D_{Ag} = disagree, DNK = don't know, A = agree, NS = non significant, Sign/S = significant, A8 = People at large like to talk to psychiatric professionals in public places, A9 = You would like to have a mental patient marry into your family, A14 = You would like to discuss your psychiatric drugs with your friends, A22 = Only some mental patients are very difficult to communicate and less assertive, A25 = Stigma against mental illness reflect individual pursuits of self-interests in a society</p>													

also distance themselves from mental health professionals, which could be changed by specific attitudinal programs.³⁰ Similarly, the attitude A14 also changed negatively which means that, like people in general, GPs' do not like to discuss their personal psychiatric issues with colleagues and friends, which has methodological implication.¹³ Rephrasing of this attitudinal sentence such as "you would suggest psychiatric patients to discuss their drugs with friends" might have given different attitudinal dimension. Indeed, only some mental patients are less assertive and difficult to communicate [A22] but according to this study GPs responses significantly changed in the reverse direction, thus perceiving them to have both good communication and assertiveness, a positive development but probably incorrect attitudinal shift. According to some researchers, health providers themselves should have very good communication styles for engaging such patients for early identification of mental illness.² The mental health providers including GPs express more negative attitudes and discrimination than the public, which is attributed to their greater knowledge of mental disorders and greater contact with chronic patients. As for the outcome of mental disorders, GPs hold more negative views than the psychiatrists'.³¹ Conversely, only 2 attitudes, A9 and A25 were positively changed, which suggested that the destigmatization programs should target the public that sustain prejudiced attitudes towards psychiatric patients and professionals.³² Although GPs were encouraged to discuss attitudes throughout the course, a specifically tailored training program on attitudes could have made considerable changes in their opinions, as revealed by other researchers.³⁰

According to logistic regression model, only type of psychiatric help in particular writing referrals to psychiatric consultations offered by the GPs predicted significant net gain in their knowledge, which has some clinical implications. It is wise to suggest that the health authorities should delegate specific responsibilities to psychiatrically trained GPs, such as prescribing psychotropics to and counseling PHC patients with mental disorders and minor psychosocial problems. They may also be allowed to deliver psychiatric services to chronic psychotic patients who often require long-term regular follow-up treatment. All this will decrease patient load on specialist psychiatric services. Conversely, GPs should refer cases with diagnostic and treatment difficulties to higher psychiatric centers for comprehensive evaluation and management. Training or teaching without practice is not as fruitful as training coupled with given clinical practical responsibilities. In one study GPs expressed their sense of difference between

possessing the necessary skills for detecting psychological distress and employing them in daily practice.³³

According to this research, female gender negatively predicted attitudes towards psychiatry, which is not compatible with other research.^{8,9,34} Rather female medical students expressed a greater interest in psychiatry and were more likely to consider pursuing it as a career.^{8,9} Pinfold and associates found that young female students having personal contacts with mental patients had marked changes in their attitudes towards people with mental health problems.³⁴ In specific terms, lack of psychiatric knowledge fuels negative attitudes towards mental patients.¹⁴ The implications of attitudinal training courses directed towards multiple audiences would be to decrease stigma against psychiatric patients. Stigma against mental illnesses is global and has many devastating effects not only on patients with mental disorders but also their families.

In contrast to female gender, the duration of GPs' medical practice reflecting regular contact with mental patients significantly predicted positive attitude to psychiatry, which is consistent with others.¹³ In another study, medical students exposed to 8-week clinical psychiatric training-knowledge and contact tend to show greater tolerance of mental illness.³⁵ Further, researchers reported positive changes in secondary school students' attitudes towards people with mental health problems.³⁴ In the present study, the other sociodemographic and experiential variables included in the logistic regression model predicted no gain in knowledge and attitude. However, multiple factors are known to predict gain both in knowledge and attitudes.^{11-14,23}

In summary, the psychiatric training course enhanced GPs overall psychiatric knowledge but their attitudes were parsimoniously affected. The type of help offered by GPs in particular writing referrals for psychiatric consultation predicted gain in knowledge while their gender and duration of medical practice differentially predicted attitudes toward psychiatry. The authors recommend that psychiatric training courses with some additional specific lectures on attitudes should continue for improving GPs psychiatric knowledge and attitudes towards people with mental disorders.

Acknowledgments. The authors express sincere thanks to course coordinator Dr. Ahmad Shouqi and all expert trainers including Drs. Mohd H. Tawfik, Muzamil H. Abdelgadir, Sayeed Rais, Mazen Rashid, Mustafa Sabit, Abdus Salaam, Abdulhameed Al-Habeeb and to all trainees who cooperated fully to participate in this study. Special thanks are due to Dr. Nazir Khan, Consultant Biostatistician, College of Dentistry, Riyadh, KSA.

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