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Assessing the attitudes of medical students towards psychiatry: A new paradigm

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ABSTRACT

Background: Gauging the probability that medical students will select psychiatry as a career is a challenge, especially in Saudi Arabia, where the profession of psychiatry has still to gain ground. Thus, the aim of the current study was to investigate the attitudes of Saudi medical students towards psychiatry.

Method: A total of 317 medical students were recruited in a cross-sectional study. An ATP-30 questionnaire was used. In addition to the suggested cut-off point of 90 in previous studies, the data were also categorized using the visual binning procedure. To enhance the number of significant predictors and obtain more realistic results, an Ordinal Logistic Regression model was applied.

Result: The attitudes of medical students towards the three outcomes (dependent) variables; "*Overall attitudes towards psychiatry*, *I want to be a psychiatrist,* and *Attitudes towards psychiatric treatment*" varied across the five explanatory (predictor) variables, when assessed using Ordinal Logistic Regression. Age and gender proved significant with the three outcome variables, whereas Exposure to Psychiatric Clerkship identified "*Overall attitudes towards psychiatry*" and "*Attitudes towards psychiatric treatment*". Significant effects from a "Psychiatrist Relative" was found in "*Overall attitudes towards psychiatry"*and "*I want to be a psychiatrist"*. The predictor variable; "Having a relative who is a psychiatric patient" was found to be significant only with, "*I want to be a psychiatrist"*.

Conclusion: The attitudes of medical students towards psychiatry can be predicted in the presence of specific factors. This is discussed in more detail in the relevant part of the study.

1. Introduction

Mental disorders are one of the leading global public health concerns. According to one study, the burden is high in the eastern Mediterranean region, with anxiety and depression being the most common conditions (WHO, 2011). Worldwide, approximately 450 million people suffer from mental health/psychiatric disorders (WHO, 2003). Furthermore, most patients suffering from mental health issues in middle- and low-income countries are unable to access counselling/treatment due to a lack professional psychiatrists, who play the principal role in the primary contact in regards to treatment (Kohn et al., 2004; Patel, 2009; WHO, 2011). Despite obvious and remarkable advancements in the available technology, some developing countries still experience various problems, such as poor economic growth, a lack of education, youth unemployment, and drug addiction, which result in numerous psychiatric problems. Whilst huge efforts have been made to raise awareness of the importance of mental health, unfavourable attitudes towards mental illness, psychotherapy, and patients with psychiatric problems still prevail within the general population, including among medical students and the medical profession itself in the reviewed literature. (Murthy and Khandelwal, 2007 and Lingeswaran, 2010; Henderson et al., 2014; Al Sinawi and Al Alawi, 2016: Al Qubtan et al., 2016; El-Giliny et al., 2018). Medical students' perceptions of the professions of psychiatry and psychotherapy, and their attitudes towards people with mental health issues, influence their choice of career as medical doctors, for whom psychiatry constitutes a potential field of specialization. This topic has been discussed in educational studies dating back to the 1960s. Medical training has direct significance for the management of mental patients at the primary level (Moos and Yalom, 1966). Cutler et al. (2006) showed that 49% of third-year students seriously considered psychiatry as a career, whereas only 27% of fourth year students did so. Psychiatry is regarded as a less popular career choice, particularly among certain medical students and newly qualified physicians (Baptista et al., 1993; Malhi et al., 2002, 2003). Despite students' exposure to psychotherapy and behavioural science through a range of courses, from the preclinical to clinical clerkship years, medical students' attitudes towards psychiatry as a future career choice have been generally negative for decades (Sierles and Taylor,

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1995; Manassis and Lofchy, 2006). This negative view is because they consider psychiatry to be unscientific in nature (Lingeswaran, 2010) and of low value in terms of professional skills (Gat et al., 2007).

Technological advancements around the world have helped people to widen their understanding and awareness of mental health, either at the protection or treatment level, and to change their lifestyles accordingly. However, the number of professional psychiatrists remains relatively low, resulting in a low doctor-patient ratio. The increasing demand for mental health professionals cannot be ignored in the light of the substantial increase in psychiatric morbidity resulting from global and socio-political changes.

In addition, some factors may affect the choice of specialty, including financial rewards, the ability to help patients, prestige, interesting and challenging work, and lifestyle factors (Feifel et al., 1999). Even though psychiatric treatment (using medications) is an essential therapeutic method in some cases, some people still avoid using psychiatric medications due to concerns about the possible side-effects, as well as a sense of stigma, harm and expense (Freudenreich et al., 2004; Angermeyer et al., 2013; Grover et al., 2014). This negativity may differ from patient to patient, which calls into question the possible causes of such disparity. Hence, the current study will address this issue by investigating some factors that could help to predict attitudes towards psychiatry as a study field, profession and psychiatric treatment method.

Efforts have been made to counteract the negativity and unpopularity of psychiatry as a career choice, as well as mental health conditions. The factors contributing to this negative behaviour include a lack of accurate information related to mental illness, the negative effect of the mass media on psychiatry and psychotherapy, and limited contact with those who work in the mental health services. These suggested reasons cannot be ruled out because they can lead to negative attitudes toward psychiatry, especially in conservative societies, hence aggravating the shortage of psychiatrists.

According to El-Gilany et al. (2010), there are about 498 psychiatrists in Saudi Arabia, including 78 Saudi psychiatrists (male and female) who are mostly involved in academic teaching. Thus, this study aimed to investigate the attitudes of medical students towards psychiatry as a field of study, a potential future medical career, and a treatment method. The following factors were considered: gender, age, before or after clerkship, having psychiatric patients in the family, and having a psychiatrist relative.

Even though attitudes towards psychiatry have been widely investigated, it is still necessary to pay more in-depth attention and to carry out careful investigations into the factors that may be explain this notable shortage. In addition, as the global burden of mental illness is underestimated for several reasons, greater general public awareness is needed.

- Research Questions: Based on the literature review, the following research questions were developed:
- What is the overall attitude of Saudi medical students towards psychiatry?
- What is the attitude of Saudi medical students towards psychiatry as a study field?
- What is the attitude of Saudi medical students towards psychiatry as a future profession?
- What is the attitude of Saudi medical students towards psychiatry as a treatment method?

2. Methods and materials

2.1. Study Design/Sample/Study Setting/Data collection

A cross-sectional quantitative design was used. A total of 317 male and female undergraduate medical students were recruited from King Abdulaziz University, Jeddah, Saudi Arabia. The study was designed and conducted in February 2018. Ethical clearance was obtained from the institutional ethical committee in the King Abdulaziz University and written informed consent was obtained from all participants. The aim of the cross-sectional study and the rights of the participants were explained to all the study population in the consent form.

2.2. Instrument

In order to address the research questions under study, the English version of the 30-item self-administered Attitude Toward Psychiatry (ATP-30) questionnaire was used. This was originally developed by Burra et al. (1982) in their pioneering work on measuring medical students' attitudes towards psychiatry. Of the 30 items contained in ATP-30, 15 items were positively phrased (4, 5, 9, 10, 11, 12, 14, 15, 18, 20, 23, 25, 27, 28, 29) and 15 were negatively phrased. Respondents were asked to express their agreement/disagreement for each item based on the Likert Scale ranging from 1 to 5, with 1 being Strongly Disagree and 5 being Strongly Agree.

2.3. Study variables

Three outcomes study variables (dependent variables) – ATP30, Psychiatry as a Career and Attitudes Towards Psychiatric Treatment - were studied with regard to five explanatory variables (predictors): Age; Gender; Exposure To Psychiatric Clerkship (Exp); having a relative or friend who is a psychiatrist (RelPsy); having a relative or friend with a psychiatric illness (RelPat).

2.4. Analysis

To analyse the data, all 15 negative phrased items were subtracted from six. A total score was then obtained by summing the scores of all 30 items. SPSS (ver. 20) was used to tease out relevant information based on the research questions and hypotheses. Since the dependent variables were either dichotomous or ordinal in nature, binary logistic regression and ordinal logistic regression techniques were used to address the research questions.

3. Results

3.1. Sampling characteristics

Table 1 shows the sampling characteristics of 317 respondents. The age of the respondents ranged from 20 to 26 years, with a mean age of 22.41 years and standard deviation of ± 1.55 years. The majority of the students were female (61.8%). This bias was because female students were more willing to participate than male students. More than 50% of the respondents had previous exposure to psychiatric clerkship. Of the total 317 respondents, more than 80% did not have any relatives who were either psychiatrists or who had a mental illness.

Table 1
Sampling Characteristics (N = 317).

Sampling Characteristics		Mean	Count	%
Participant's Age		22.41	–	–
Participant's Gender	Male		121	38.2
	Female		196	61.8
Exposure to Psychiatric Clerkship	Exposed		180	56.8
	Never		137	43.2
Have a Relative Psychiatrist	Yes		33	10.4
	No		284	89.6
Having Relative or Friend with Mental Illness	Yes		39	12.3
	No		278	87.7

Table 2
ATP-30.

		DGR 90				Ordinal Categories					
		Low		High		Low		Neutral		High	
		N	%	N	%	N	%	N	%	N	%
Gender	M	42	34.7	79	65.3	44	36.40	26	21.50	51	42.10
	F	35	17.9	161	82.1	38	19.40	59	30.10	99	50.50
Exposure	Y	13	7.2	167	92.8	17	9.40	66	36.70	97	53.90
	N	64	46.7	73	53.30	65	47.40	19	13.90	53	38.70
RelPsy	Y	2	6.1	31	93.90	2	6.10	11	33.30	20	60.60
	N	75	26.4	209	73.60	80	28.20	74	26.10	130	45.80
RelPat	Y	5	12.8	34	87.20	6	15.40	18	46.20	15	38.50
	N	72	25.9	206	74.10	76	27.30	67	24.10	135	48.60

3.2. Reliability

Reliability is essentially a synonym for consistency (Cohen et al., 2001). The most common measure of consistency is Cronbach's (1951) α coefficient. A rule of thumb of α greater than or equal to 0.7 was suggested by Nunnally (1978); it is an indication of strong item homogeneity and suggests that the sampling sphere has been adequately captured. The value of ATP-30 for the present study is Cronbach's Alpha = 0.70, which suggests strong item homogeneity.

3.3. Descriptive statistics

Descriptive statistics for each outcome variable vis-a-vis four categorical predictor **variables** are displayed in Table 2 to 4 . Table 2 summarizes the overall attitudes of the medical students towards psychiatry. Across all four categorical predictor variables, if three categories using visual binning techniques are used, the percentages in the high category differ significantly from the percentages in the high category of the *Global Rating 90* (cut-off point). This shows that high category of *Global Rating 90* merges the percentages of students with neutral attitudes towards psychiatry. The same applies for the second outcome variable *"I would like to be a psychiatrist"* (see Table 3). However, the third outcome variable "*Attitudes towards psychiatric treatment",* which is a summated score of four items (the lowest being 4 = 4x1 and highest 20 = 4x5) having a *Global Rating 12*, the percentage in the high category is the same as in the high category of the categories using the visual binning technique presented in Table 4. Again, it can be seen that the percentages of the neutral category are merged in the low category of the *Global Rating 12.* Merging neutral data into low or high categories in the global cut-off point means adding or losing a large chunk of information, which may affect the overall outcomes of the study. The same will be assessed in subsection 4.4, where the authors will discuss the appropriate prediction models for the three outcome variables.

Table 4
Psychiatry Treatment.

		DGR12				Ordinal Categories					
		Low		High		Low		neutral		High	
		N	%	N	%	N	%	N	%	N	%
Gender	M	92	76.00	29	24.00	62	51.20	30	24.80	29	24.00
	F	143	73.00	53	27.00	70	35.70	73	37.20	53	27.00
Exposure	Y	125	69.40	55	30.60	63	35.00	62	34.40	55	30.60
	N	110	80.30	27	19.70	69	50.40	41	29.90	27	19.70
RelPsy	Y	23	69.70	10	30.30	11	33.30	12	36.40	10	30.30
	N	212	74.60	72	25.40	121	42.60	91	32.00	72	25.40
RelPat	Y	27	69.20	12	30.80	16	41.00	11	28.20	12	30.80
	N	208	74.80	70	25.20	116	41.70	92	33.10	70	25.20

Table 5
Two-sample t-test.

		ATP-30		Psy as Career		Psy Treatment	
		Means	Sig	Means	Sig	Means	Sig
Gender	M = 1	94.44	0.002	2.55	0.000	13.71	0.320
	F = 2	97.97		3.07		13.96	
Exposure	Y = 1	99.12	0.000	2.79	0.221	14.23	0.002
	N = 2	93.34		2.96		13.39	
RelPsy	Y = 1	99.45	0.086	2.39	0.015	14.27	0.265
	N = 2	96.30		2.92		13.82	
RelPat	Y = 1	97.21	0.700	2.18	0.000	14.05	0.576
	N = 2	96.54		2.96		13.84	

The means of the scores for the three outcome variables across the four categorical predictor variables, along with their significant values, are displayed in Table 5. There were significant differences between male and female students in terms of their overall attitudes towards psychiatry and adopting psychiatry as career. In both cases, females scored higher positive attitudes (97.77, 3.07) compared to males (94.44, 2.55). Regarding attitudes towards psychiatric treatment, there was no significant difference in attitudes between males and females. Students with exposure to a psychiatric clerkship significantly differed from those without this exposure in terms of their overall attitude towards psychiatry and attitude towards psychiatric treatment. But it was not the case in terms of adopting psychiatry as a career.

The attitudes of the students with a psychiatrist relative differed significantly with regard to adopting psychiatrist as a career for the sake of not having a psychiatrist relative, but this was not the case for the other two outcome variables. The same trend was observed for the students who had a relative with a psychiatric illness.

Table 6 clearly shows that while using binomial categories based on *Global Rating 90*, there are 75.5% respondents in the high category, but when categories based on visual binning are used, the proportion of

Table 3
I would like to be a psychiatrist.

		DGR 90				Ordinal Categories									
		0		1		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gen	M	62	51.20	59	48.80	26	21.50	36	29.80	28	23.10	29	24.00	2	1.70
	F	69	35.20	127	64.80	24	12.20	45	23.00	46	23.50	56	28.60	25	12.80
Exp	Y	81	45.00	99	55.00	31	17.20	50	27.80	39	21.70	45	25.00	15	8.30
	N	50	36.50	87	63.50	19	13.90	31	22.60	35	25.50	40	29.20	12	8.80
RelPsy	Y	20	60.60	13	39.40	11	33.30	9	27.30	4	12.10	7	21.20	2	6.10
	N	111	39.10	173	60.90	39	13.70	72	25.40	70	24.60	78	27.50	25	8.80
RelPat	Y	26	66.70	13	33.30	14	35.90	12	30.80	7	17.90	4	10.30	2	5.10
	N	105	37.80	173	62.20	36	12.90	69	24.80	67	24.10	81	29.10	25	9.00

Table 6
Percentages of Binomial and Ordinal Categories for Study Variables.

Variables	Categories		N	%
"ATP30"	Binomial	Low	77	24.30
		High	240	75.70
		Total	317	100.00
	Ordinal Categories	Low	82	25.90
		Neutral	85	26.80
		High	150	47.30
		Total	317	100.00
"I want to be a psychiatrist"	Binomial	0	131	41.30
		1	186	58.70
		Total	317	100.00
	Ordinal Categories	1	50	15.80
		2	81	25.60
		3	74	23.30
		4	85	26.80
		5	27	8.50
		Total	317	100.00
"Psychiatric Treatment"	Binomial	Low	235	74.10
		High	82	25.90
		Total	317	100.00
	Ordinal Categories	Low	132	41.60
		Neutral	103	32.50
		High	82	25.90
		Total	317	100.00

respondents in the high category was reduced to 47.3%. Hence, the use of ordinal logistic regression, rather than binary logistic regression, is proposed for the current study. Regarding the second variable *"I want to be a psychiatrist"*, it can be seen from the ordinal categories, that the neutral category with 74 respondents was merged into the high category under the binary grouping, although this is not a natural choice for the high category. Goodness of fit and the omnibus test for both the binary and ordinal logistic regression models were satisfactory, as will be discussed later in Table 8.

This table also shows the results for the third outcome variable "*Attitudes towards psychiatric treatment*" for both binomial and ordinal categories. This outcome variable is based on the summated score of four items. Based on the philosophy of *Global Rating 90,* a *Global Rating 12* with two categories was formed. Respondents with a score of 12 or under were placed in the low category, whilst those with a score of more than 12 were placed in the high category. Ordinal categories based on the technique of visual binning using SPSS had the same number of respondents in the high category as *Global Rating 12*.

Table 7 shows Goodness of Fit for both the binary and ordinal logistic regression models. Both values of the deviance (for binomial = 1.257 and for ordinal = 1.629) are greater than the significance level of 0.05, showing that both the binary and ordinal regression models fit the data well. Omnibus tests show that the *p*-values for both binary and ordinal are less than 0.01. This means that the combined effect of all the predictor variables on the outcome variable is significant.

The second outcome variable "I want to be a psychiatrist" for both binomial and ordinal categories. Since this outcome variable is based on only one item, two groups were formed following the philosophy of Global Rating 90: respondents scoring 3 or above were placed in the high category, and the rest in the low category. Both values of the deviance of binary and ordinal logistic regression models (1.884 and 1.019 respectively) with significance level of 0.05, showing that the models fit the data well.

Regarding the third outcome variable "psychiatric treatment", the rest of the table shows that *p*-values for Goodness of Fit and omnibus tests using both binary and ordinal were less than 0.01, meaning that the models fit the data well and the combined effect of all the predictor variables on the outcome variable is significant.

For the first outcome variable, this table (Table 8) shows the results of the individual effects of four-predictor variables along with age. Using binary logistic regression alone, three predictor variables were found to be significant (Gender, Exposure and Psychiatrist Relative), of which Gender had the highest odds ratio (*Exp (B) = 3.978*). This means than male students are 3.978 times or (3.978-1 = 2.978 × 100) 297.8% more likely to have overall positive attitudes towards psychiatry when all the other predictors are kept constant. When the ordinal logistic regression procedure was used, an additional fourth predictor (Age) was also significant. However, when using ordinal logistic regression, Exposure had the highest odds ratio (*Exp (B) = 4.771*), which means that medical students with Exposure to clerkship are 4.771 times more likely to have overall positive attitudes towards psychiatry, followed by Psychiatrist Relative and Gender. Whilst Gender had the highest odds ratio under the binary logistic regression model under ordinal logistic regression this was reversed, (*Exp (B) = 0.519)*. This means that males are (1-0.519 = 0.481 × 100) 48.1% less likely to have an overall positive attitude towards psychiatry. In other words, female medical students were 51.9% more likely to have an overall positive attitude towards psychiatry.

Moreover, this table clearly shows the results of the second outcome variable; *"I want to be a psychiatrist"* in present of the individual effects of the four-predictor variables separately, along with age, for both the binary and ordinal logistic regression models. This again shows that when using binary logistic regression only three **predictor** variables were found to be significant (Gender, Relative as Patient and Age). Of these, Rel.Pat had the highest odds ratio *(Exp(B) = 3.515),* followed by Gen *(Exp(B) = 1.831)* and then Age (Exp(B) = 1.343), all with an odds ratio greater than 1. However, when the ordinal logistic regression procedure was used, an additional fourth predictor – Psychiatrist Relative - was also found to be significant. When using the ordinal logistic regression, however, Age had the highest odds ratio *(Exp (B)* = 0.774), followed by Gender *(Exp (B) = 0.502)* and Psychiatrist Relative *(Exp (B) = 0.495)*. Again, it can be seen that all odds ratios for

Table 7
Goodness of Fit and Omnibus Tests for both Binary and Ordinal Categories of the Study Variables.

Variables	Categories	Tests	Goodness of Fit			Omnibus Test		
			Value	df	Value/df	L R χ^2	df	Sig.
"ATP 30"	Binomial	Deviance	61.603	49	1.257	96.859	5	.000
		Pearson χ^2	89.420	49	1.825			
	Ordinal Categories	Deviance	167.760	103	1.629	45.930	5	.000
		Pearson χ^2	158.731	103	1.541			
"I want to be a psychiatrist"	Binomial	Deviance	92.303	49	1.884	34.271	5	.000
		Pearson χ^2	81.623	49	1.666			
	Ordinal Categories	Deviance	214.989	211	1.019	43.982	5	.000
		Pearson χ^2	252.686	211	1.198			
"Psychiatric Treatment"	Binomial	Deviance	58.797	49	1.200	12.756	5	.008
		Pearson χ^2	49.672	49	1.014			
	Ordinal Categories	Deviance	116.123	103	1.127	16.444	5	.006
		Pearson χ^2	103.806	103	1.008			

Table 8
Comparing Binary and Ordinal Logistic Regressions of Study Variables.

Binary Logistic Regression				Ordinal Logistic Regression			
ATP-30							
Parameters	B	Sig,	Exp(B)	Parameters	B	Sig,	Exp(B)
(Intercept)	−4.077	.162	.017	[lo = 1]	−4.513	.020	.011
				[hi = 2]	−3.199	.099	.041
[Gen = 1]	1.381	.000	3.978	[Gen = 1]	−.656	.005	.519
[Gen = 2]	0[a]	.	1	[Gen = 2]	0[a]	.	1
[Exp = 1]	−2.959	.000	.052	[Exp = 1]	1.562	.000	4.771
[Exp = 2]	0[a]	.	1	[Exp = 2]	0[a]	.	1
[Rel.Psy = 1]	−1.763	.032	.171	[Rel.Psy = 1]	.837	.029	2.310
[Rel.Psy = 2]	0[a]	.	1	[Rel.Psy = 2]	0[a]	.	1
[Rel.Pat = 1]	−.490	.402	.612	[Rel.Pat = 1]	−.271	.391	.762
[Rel.Pat = 2]	0[a]	.	1	[Rel.Pat = 2]	0[a]	.	1
Age	.169	.221	1.184	Age	−.182	.046	.833
(Scale)	1[b]			(Scale)	1[b]		
"I want to be a psychiatrist"							
(Intercept)	−7.235	.001	.001	[Psycar = 1]	−7.847	.000	.000
				[Psycar = 2]	−6.364	.000	.002
				[Psycar = 3]	−5.320	.003	.005
				[Psycar = 4]	−3.473	.054	.031
[Gen = 1]	.605	.016	1.831	[Gen = 1]	−.689	.001	.502
[Gen = 2]	0a	.	1	[Gen = 2]	0[a]	.	1
[Exp = 1]	−.362	.256	.696	[Exp = 1]	.386	.138	1.471
[Exp = 2]	0a	.	1	[Exp = 2]	0[a]	.	1
[Rel.Psy = 1]	.696	.083	2.005	[Rel.Psy = 1]	−.703	.049	.495
[Rel.Psy = 2]	0a	.	1	[Rel.Psy = 2]	0[a]	.	1
[Rel.Pat = 1]	1.257	.001	3.515	[Rel.Pat = 1]	−.1.347	.000	.260
[Rel.Pat = 2]	0a	.	1	[Rel.Pat = 2]	0[a]	.	1
Age	.295	.004	1.343	Age	−.256	.003	.774
(Scale)	1b			(Scale)	1[b]		
"Psychiatric Treatment"							
(Intercept)	−5.000	.044	.007	[PsyTrt = 1]	−2.799	.138	.061
				[PsyTrt = 2]	−1.353	.473	.259
[Gen = 1]	.123	.658	1.131	[Gen = 1]	−.475	.035	.622
[Gen = 2]	0[a]	.	1	[Gen = 2]	0[a]	.	1
[Exp = 1]	−1.167	.001	.311	[Exp = 1]	.871	.002	2.389
[Exp = 2]	0[a]	.	1	[Exp = 2]	0[a]	.	1
[Rel.Psy = 1]	−.193	.644	.825	[Rel.Psy = 1]	.316	.365	1.371
[Rel.Psy = 2]	0[a]	.	1	[Rel.Psy = 2]	0[a]	.	1
[Rel.Pat = 1]	−.231	.548	.794	[Rel.Pat = 1]	−.015	.964	.985
[Rel.Pat = 2]	0[a]	.	1	[Rel.Pat = 2]	0[a]	.	1
Age	.302	.010	1.353	Age	−.200	.030	.818
(Scale)	1[b]			(Scale)	1[b]		

the significant predictors are less than 1, which suggests that the significant categories in the ordinal logistic regression became reversed when binary logistic regression was used.

With respect to the third outcome variable; *"Psychiatric Treatment"*, the individual effects of four-predictor variables along with age, using both the binary and ordinal logistic regression models. When using binary logistic regression, only two predictor variables were found to be significant (Exposure and Age), of which Age had the highest odds ratio *(Exp(B) = 1.353)*. This means that a unit increase in age will result in a 1.353 times more positive attitude towards psychiatric treatment. However, when the ordinal logistic regression procedure was used, an additional third predictor – gender - was also found to be significant. However, when using the ordinal logistic regression, Exposure had the highest odds ratio *(Exp (B) = 2.389)*, followed by Age (*Exp (B) = 0.818*) and gender (*Exp (B) = 0.622*). The results of the significant categories were reversed in ordinal logistic regression. For instance, in the binary case, the higher the age, the higher the attitudes towards psychiatric treatment, whereas in ordinal logistic regression, the lower the age, the higher the attitudes towards psychiatric treatment. Furthermore, in the case of Exposure to Clerkship, in the binary case the odds ratio was 0.311 (1-0.311 = 0.699 × 100) or 69.9%, which means that medical students with prior exposure to clerkship are less likely to have a positive attitude towards psychiatric treatment. However, in ordinal logistic regression, medical students with prior exposure to clerkship were (2.389-1 = 1.389 × 100) 138.9% more likely to have a positive attitude towards psychiatric treatment.

4. Discussion

The present study sought to reveal some patterns and tendencies of Saudi medical students' attitudes towards psychiatry. Although some previous studies have examined the attitudes of medical students in the Arab region towards psychiatry, there are some important changes in the field of mental health that have been witnessed recently. For instance, psychotherapy, which used to be completely confined to large mental hospitals, is now being gradually replaced by psychiatric facilities in general hospitals and private clinics. These changes prompted the author to carry out a new investigation in a particular region of Saudi Arabia.

Knowing the attitudes of medical students towards psychiatry is important because they will be involved in the delivery of healthcare. Negative attitudes towards psychiatry will have a negative effect on psychiatric patients.

In line with previous studies, the Saudi medical students in this study showed an overall positive attitude towards psychiatry. The possible reasons for this positive attitude may include the enjoyment and personal interest of the participants, flexible working hours, academic opportunities, the shortage of psychiatrists and the demand for mental health services, following in the footsteps of a parent who is a psychiatrist, financial rewards, and the feeling of being socially

responsible or helping patients efficiently.

With the help of ATP-30, the more realistic result was found is a more positive attitude towards psychiatry in females, as well as their increased tendency and willingness to choose psychiatry as a future career. Thus, it is predicted that female students have a more positive attitude towards psychiatry as a career. This finding is supported by the nature of females in willingness to offer help and generally showing more empathy than males towards patients (Christov-Moore et al., 2014). Logically, anyone who has a positive attitude towards psychiatry as a study field could have the same attitude towards psychiatry as a career choice.

Nevertheless, although this result seems to contradict the previously reviewed studies in the literature, it is in line with other studies (for example Cutler et al., 2006; Khan et al., 2008: Maric et al., 2011), which reported a positive attitude towards psychiatry as a career choice.

As with studies of Reddy et al. (2005); Mottaghipour et al. (2006) and Amini et al. (2016), exposure to psychiatric clerkship showed a statistically significant relationship with attitudes towards psychiatry. In addition, having a relative or friend with a mental illness also showed a statistically significant relationship with students' attitudes towards psychiatry as a treatment method, but not necessarily as a career option. Even though the exposure to a psychiatric clerkship can predict a positive attitude towards psychiatry in general and as a treatment method, it does not, however, increase interest in psychiatry as a career option, as was found earlier in studies (Lingeswaran, 2010; Lyons, 2013). Exposure to a psychiatric clerkship would be expected to have a positive influence on students' attitudes towards psychiatry, thus leading to a positive attitude towards psychiatry as a career choice. However, this negativity can be justified by the reverse effect of the education given by clinical teachers (McParland et al., 2003; Hayat et al., 2017) or might be due to inability to overcome the widely spread public mental health stigma.

More effort needs to be made to improve recruitment in the field of psychiatry with anti-stigma programme included. For starters, the quality and quantity of psychiatric teaching and placements are in need of a careful review. Secondly, more interactions between medical students and psychiatrists or psychiatric patients could improve recruitment in psychiatry. Thirdly, more training appears to be needed. The negative association between age and students' attitudes toward psychiatry is supported by earlier studies (for example Al-Ansari and Alsadadi, 2002; Hailesilassie et al., 2017). Nonetheless, it is strongly recommended to carefully replicate this finding using a larger sample size from different medical schools in order to investigate this association between age and attitudes towards psychiatry.

Although male students had a negative attitude towards psychiatry as a treatment method, factors such as being female, exposure to a psychiatric clerkship and having a relative who is a psychiatric patient were found to be significant predictors of a positive attitude towards psychiatry as a treatment method.

Furthermore, the main limitation of this study is that the medical students were selected from only one institute. Therefore, the results of the investigation cannot be generalised to other medical schools and countries. Further investigations are required, which should include as many medical schools from as many different countries as possible. The study was also not longitudinal, which adds another limitation. It cannot therefore measure changes in attitudes towards psychiatry, either as a field of study, treatment method or future career choice.

5. Conclusion

Despite the general finding of a positive attitude towards psychiatry among undergraduate medical students, psychiatry as a future medical career option was still found to be perceived unfavourably and was unpopular among male students. Exposure to a psychiatric clerkship, gender, age, and having a relative or friend who is a psychiatric patient were found to be the most effective predictors for the outcome variables. However, some inaccurate beliefs still predominate among students, which can and should be removed by educating them at an early stage. Furthermore, a mixed-methods approach, including longitudinal studies, will assist in determining whether current psychiatry teaching in medical schools affects students' attitudes towards psychiatry.

Conflict of interest

I can confirm that there is no conflict of interest or financial disclosures related to this work.

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