

ORIGINAL ARTICLE

EFFECT OF EDUCATION ON STIGMA AND DISCRIMINATION TOWARDS MENTAL ILLNESS: A MULTIVARIATE ANALYSIS OF COVARIANCE

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ABSTRACT

People with mental illness often encounter stigma and discrimination. Mental illness-related stigma and discrimination represent the enormous obstacles that stand in the way of delivering mental health care. Little is known about stigma and discrimination toward mental illness in rural Sarawak. Thus, this study aimed to identify the stigma and discrimination towards mental illness among Sarawak's rural community and factors affecting them. A cross-sectional survey was carried out on 840 respondent adults aged 21 and above. A validated Community Attitude towards Mental Illness (CAMI) and Discrimination towards Mental Illness questionnaire was used for data collection. A Two-way Multiple Analysis of Covariance (Two-way MANCOVA) test was carried out to determine how much gender and education level influence stigma and discrimination towards mentally ill patients. Analysis showed that there was a statistically significant difference of standardised stigma and discrimination scores with education level ($p < .001$), but not with gender ($p > .05$). Age had a positive linear effect on both stigma and discrimination, whereas experience with mentally ill patients negatively affected both stigma and discrimination. Individuals with a lower level of education, older in age, and lesser experience in dealing with the mentally ill would have a higher level of stigma and discrimination towards mental illness. Thus, targeted and practical strategies need to be organised and implemented to combat mental illness-related stigma and discrimination.

Keywords: Mental illness, stigma, discrimination, education, rural Sarawak

INTRODUCTION

Mental illness is one of the non-communicable diseases (NCD) that had substantial public health concern globally. Based on the epidemiological transition theory, the shift has occurred from communicable diseases to non-communicable diseases (NCD) in most countries and established a devastating global premature mortality^{1,2}. The disease epidemiology transition is mostly expected to happen in developing countries compared to underdeveloped and developed countries. This is most probably due to the increasing lifespan and rapid ageing processes. Rehm and Shield³ reported that the global burden of mental illness accounts for 19% of years lived with disability (YLDs) and 7% of disability-adjusted life-years (DALYs). The most type of mental illness associated with high DALYs was depression, with higher rates among women, whereas the men had higher rates among those with substance use disorders^{3,4}.

In Malaysia, the National Health and Morbidity Survey (NHMS) is an established platform to monitor the population health status. This survey showed a relative increase in mental illness prevalence from 10.7% in 1966 to 29.2% in 2015 among adults⁵. Female respondents demonstrated a slightly higher prevalence of mental illness compared to male respondents. However, it was not significant. NHMS 2019 had assessed the specific mental illness among adults, which was depression and revealed that the prevalence was

2.3%⁶. However, this prevalence showed a difference compared to an earlier study that estimated the prevalence of depression in Malaysia was between 8% and 12%⁷. The prevalence of mental illness for children between 5 to 15 years decreased from 12.1% in 2015 to 7.9% in 2019⁶. Boys, younger age groups, and rural areas are the risk factors of mental illness among children.

Mental illness is always associated with stigma and discrimination among the public. Stigma is when someone sees a person with mental illness negatively because of his/her mental illness. Similarly, discrimination is when someone treats a person with mental illness negatively because of his/her mental illness. Social stigma and discrimination can worsen mental health problems and stop a person with mental illness from getting the help they need. It would influence them in self-identifying their mental health status and behaviour on seeking a treatment, which led to untreated mentally ill patients⁸. Seeman et al.⁹ conducted a worldwide study and found that mental illness-related stigma and discrimination are widespread among countries in Asia. An internet-based study in Japan revealed that people's professional groups were stigmatised towards mental illness compared to the general population¹⁰. At the community level, the family members had a lower stigma to the general population¹¹. People in the community who suffered from mental illness were

not seeking treatment due to fear of being stigmatised by their community¹².

Several factors were found to be affecting factors to mental health-related stigma. Female respondents are more stigmatised towards mental illness than male respondents¹³. However, the findings contradicted Razali and Ismail¹¹, revealing that male respondents displayed a more social distance towards mental illness patients. Furthermore, a few studies found that people with higher education levels are more likely to have lower levels of stigma and discrimination towards mental illness^{11,14-16}. However, contradictory findings show that people with higher education levels have a higher stigma towards the mentally ill^{13,17}.

There were limited studies to examine the stigma and discrimination towards mental illness among the community in rural areas of Sarawak, Malaysia. The uniqueness of rural communities is that when they experienced someone among their family members who developed symptoms of mental problems, they stay at their place or seek treatment from shamans or witchcraft practitioners. This is most probably due to the stigma against mental illness and do not want to be discriminated against. There is an inadequate exploration of the effect of education on stigma and discrimination toward mental illness. Therefore, this study is essential to fill in the research gap. This study's main objective was to determine the stigma and discrimination toward mental illness among Sarawak's rural community and the affecting factors. The findings could be applied in designing effective programs that would combat public stigma towards mental illness and provide guidance for the local authorities or government to undertake further strategic action.

METHODS

Study population and sampling procedure

This was a cross-sectional study using a multi-stage sampling method to recruit the respondents from the rural areas of Sarawak, Malaysia. Sarawak is located in East Malaysia, also known as Malaysia Borneo Island. Random selection was done to choose three divisions and subsequently two districts from each division. Then, five rural villages and 28 households were selected by systematic random sampling technique. Malaysian citizens aged 21 years and above with no mental illness or drug dependence and residing in rural areas were included in this study. Those who were unable to answer the questionnaire or refused to sign the consent form were excluded from the study. The sample size was calculated using the population proportion formula. With the anticipation of a 10% non-response rate, there were 840 respondents included in this study.

Data collection instrument

Data were collected using an interviewer-administered questionnaire which includes demographic characteristics. The others were adapted from different sources such as stigma¹⁸, discrimination¹³, knowledge^{14,16}, media influence¹⁶ and previous experience with mentally ill¹⁶. Two translators have translated the questionnaire items forward and backward between Malay and English language. The experts reviewed the Malay version, and minor changes were made based on their feedback. Finally, the Malay version questionnaire was pretested among 30 respondents from a non-sampled area.

Stigma towards mental illness

Stigma towards mental illness questionnaire was adapted from the Community Attitudes towards Mental Illness (CAMI) scale¹⁸. This questionnaire has four domains: authoritarianism, benevolence, social restrictiveness, and community ideology towards mental health, with ten items for each domain. Respondents were required to rate each item from 1 to 5 (Likert's scale), defining strongly disagree to strongly agree. Cronbach's alpha of .60 and above was attained.

Discrimination towards mental illness

There was 13-items for the discrimination assessment. Like the stigma questionnaire, respondents were also required to rate each item according to the Likert scale of 1 to 5, strongly disagreed to strongly agree. Cronbach alpha for discrimination towards people with mental illness was 0.782.

Knowledge of mental illness

This variable had 11 items, and respondents were required to answer each item with either a 'Yes', 'No', or 'Do not know'. Based on the correct responses, a summative score was calculated.

Media influence on mental illness

The media influence questionnaire consisted of seven items and required the respondents to answer a 'yes' or 'no' for each item. The answer 'yes' for unwanted media influence item and 'no' for the right media influence item would attain a score of 1. Otherwise, a score of zero was given.

Experience with people with mental illness

Six questions with four positive and two negative question items were used to assess the experience with the mentally ill patient. Each positive item was scored 1 for 'yes' and zero for 'no'. Meanwhile, it was scored 1 for 'no' and zero for 'yes' for each negative item.

Ethical issues

The research assistants were briefed on the study and the objectives, which they later explain to the respondents. Respondents were also informed that their contribution was voluntary and asked to sign a written consent before data collection. The data received from the respondents were kept

anonymous and kept strictly confidential. Before conducting the research, ethics approval was obtained from authorities.

Data analysis

Microsoft Excel with a validation check was used for data entry to ensure correct data entry. IBM SPSS was used for data analysis¹⁹. Descriptive statistics were presented with means, standard deviations, percentages, and frequency. Inferential statistics were applied to test the associations of each dependent variable and independent variable. The standardised stigma and discrimination scores were calculated and became dependent variables. We hypothesised that gender and education level might influence stigma and discrimination towards mentally ill patients. However, age and experience with mentally ill patients had a linear effect on stigma and discrimination towards ill patients, considered covariate. A two-way analysis of covariance (MANCOVA) was carried out to reduce type 1 error and quantified the influencing factors. Box's Test of Equality of Covariance Matrices was tested to assume homogeneity of covariance across groups. Wilk's Lambda results were interpreted, showing the statistical significance of the differences between groups. Mahalanobis distance was determined to test for multivariate outlier²⁰. A p-value of less than .05 was considered statistically significant.

RESULTS

Participant characteristics

A total of 840 data with equal distribution of male and female was analysed. The mean (SD) age of respondents was 43.02(11.14) years. Table 1 illustrates the respondents' characteristics. Malay, Muslim and living with a partner make up the majority of the participants. The result shows that the highest education level was secondary education (50.1%), followed by primary education (30.5%). Most of the respondents were unemployed (45.5%), followed by self-employed (35.8%), with the mean monthly household income was MYR1012.24 (Table 1).

Experience with mentally ill

Table 2 illustrates the experience with mentally ill patients. The mean (SD) for total experience with a mentally ill patient score was 2.85 (1.16). Most respondents had no comfortable experience when they were chased by mentally ill patients (95.1%) or disturbed by them (84.3%).

Stigma and discrimination towards mental illness

Table 3 demonstrates the standardised stigma and discrimination score by gender and level of education. With regards to the standardised stigma score, analysis showed that the highest standardised stigma mean (SD) for male respondents were among those with no formal

education, 0.352 (1.141). A similar result was seen among female respondents with no formal education where, the highest standardised stigma mean (SD) was 0.586 (0.983). These standardised stigma scores for both male and female respondents showed a decrement when increasing the level of education. Furthermore, the standardised discrimination scores also decrease when increasing the level of education among male and female respondents. The highest standardised discrimination mean (SD) for male respondent was 0.253 (1.107), where 0.110 (1.141) for female respondent where both have no formal education.

Factors influencing stigma and discrimination towards mental illness

To test our research question, how much the gender and level of education influence stigma and discrimination towards mentally ill patients, a two-way multivariate analysis of covariance (MANCOVA) was carried out. The dependent variables were the standardised stigma and discrimination score. The independent variables were gender and education level, whereas age and experience were included in the model as covariates.

Two-way MANCOVA revealed that there was a statistically significant difference of standardised stigma and discrimination scores among different levels of education, ($F(6,1658)=4.217$, $p<.001$, Wilks' Lambda = .970, partial eta squared = .015). However, there was no statistically significant difference of standardised stigma and discrimination scores based on gender ($F(2,829) = 0.489$, $p = .614$, Wilks' Lambda = .999, partial eta squared = 0.001). Test of between-subjects effects demonstrated that there was a statistically significant difference of standardised stigma score among different levels of education ($F(3,830) = 7.423$, $p<.001$, partial eta squared = 0.026). Furthermore, the results showed no statistically significant difference in standardised discrimination scores among different education levels ($F(3,830) = 0.846$, $p=.469$, partial eta squared = .003).

The post-doc comparison of Bonferroni test found that there was a statistically significant mean difference of standardised stigma score ($p<.05$) between respondent with tertiary education (mean = -0.49, SD = 0.84) and respondent with other level of education; no formal education (mean = 0.47, SD = 1.07), primary education (mean = 0.20, SD = 1.02) and secondary education (mean = -0.11, SD = 0.94). Besides, there was a statistically significant mean difference of standardised stigma score ($p<.05$) between respondents with secondary education and respondent with no formal education.

Table 1 Characteristics of the respondents

Characteristics	Frequency	Percentage (%)	Statistics
Age in years			
<30	112	13.3	Mean (SD) = 43.02 (11.14) years Min, 21; Max, 78
30-39	229	27.3	
40-49	228	27.1	
50-59	228	27.1	
≥60	43	5.1	
Ethnicity			
Malay	271	32.3	
Iban	267	31.8	
Bidayuh	120	14.3	
Melanau	74	8.8	
Others ^a	108	12.9	
Religion			
Islam	377	44.9	
Christian	376	44.8	
Others ^b	87	10.4	
Living status			
Living with partner	654	77.9	
Living without partner	186	22.1	
Level of education			
No formal education	78	9.3	
Primary education	256	30.5	
Secondary education	421	50.1	
Tertiary education	85	10.1	
Occupation			
Unemployed	382	45.5	
Private	82	9.8	
Government	49	5.8	
Self-employed	301	35.8	
Retiree	26	3.1	
Monthly income (MYR)			
<501	142	16.9	Mean (SD)= 1012.24 (627.01) Min, 200; Max, 7000
501 to 1000	468	55.7	
1001 to 1500	126	15.0	
>1500	104	12.4	

^aOthers included Chinese, Orang Ulu, ^bOthers included Buddhism, Hinduism, no religion

Table 2 Distribution of experience with mentally ill

Experience with a mentally ill patient	Yes	No
I have previous experience taking care of a family member that is mentally ill	8.9	91.1
I have a family member that is mentally ill	17.6	82.4
I have communicated with people who have a mental illness	48.6	51.4
I have lived beside people with mental illness	31.0	69.0
I have been disturbed by a mentally ill patient (-)	15.7	84.3
I have been chased by a mentally ill patient (-)	4.9	95.1
<i>Mean (SD)</i>	2.85 (1.16)	
<i>Min, Max</i>	0, 6	

Table 3 Standardised stigma and discrimination score by gender and level of education

	Gender	Level of education	Mean	SD
Standardised Stigma score	Male	No formal education	0.352	1.141
		Primary education	0.187	1.031
		Secondary education	-0.110	0.946
		Tertiary education	-0.488	0.713
	Female	No formal education	0.586	0.983
		Primary education	0.210	1.009
		Secondary education	-0.105	0.942
		Tertiary education	-0.492	0.950
Standardised discrimination score	Male	No formal education	0.253	1.107
		Primary education	0.134	0.949
		Secondary education	-0.075	1.019
		Tertiary education	-0.370	0.848
	Female	No formal education	0.110	1.141
		Primary education	0.105	0.998
		Secondary education	-0.046	0.963
		Tertiary education	-0.124	1.059

Table 4 illustrates the results of two-way multivariate analysis of covariance (MANCOVA) for community stigma and discrimination towards mental illness and the linear effect of covariates (age in years and experience) to each dependent variable. The analysis showed no statistically significant difference in stigma and discrimination towards mental illness and gender ($p > .05$). However, there were statistically significant difference of stigma and level of education; included no formal education ($B = 0.789, p < .001$), primary education ($B = 0.561, p < .01$), and secondary education ($B = 0.335,$

$p < .05$). Age had a significant positive linear effect on standardised stigma towards mental illness ($B = 0.012, p < .01$). In contrast, experience negatively affected mental illness stigma ($B = -0.144, p < .001$). Furthermore, the analysis also found that education level had no significant influence on discrimination towards mental illness. However, age in years had a positive linear effect on standardised discrimination ($B = 0.012, p < .01$), whereas experience had a negative linear effect on standardised discrimination ($B = -0.124, p < .001$).

Table 4 Factors influencing stigma and discrimination towards mental illness: Multivariate Analysis of Covariance

Parameter	B	SE	95% CI	
			LL	UL
Standardised stigma				
Intercept	-.470*	.198	-.857	-.082
Gender				
Male	-.024	.208	-.432	.385
Female (RC)	0.0			
Level of education				
No formal education	.789***	.222	.353	1.225
Primary education	.561**	.173	.222	.900
Secondary education	.335*	.155	.030	.640
Tertiary education (RC)	0.0			
Age in years	.012**	.004	.005	.019
Experience score	-.144***	.029	-.200	-.088
Standardised discrimination				
Intercept	-.162	.203	-.561	.237
Gender				
Male	-.278	.214	-.698	.142
Female (RC)	0.0			
Level of education				
No formal education	-.054	.229	-.502	.395
Primary education	.085	.178	-.264	.434
Secondary education	.023	.160	-.291	.336
Tertiary education (RC)	0.0			
Age in years	.012**	.004	.005	.019
Experience score	-.124***	.029	-.182	-.067

* $p < .05$, ** $p < .01$, *** $p < .001$

RC: Reference category, LL= Lower limit of 95% CI, UL= Upper limit of 95% CI

CI= Confidence interval

DISCUSSION

There are minimal studies that examined both stigma and discrimination toward mental illness at the same time. This study identified the factors influencing stigma and discrimination towards mental illness. The final model revealed that gender was not an influencing factor for stigma and discrimination. The finding showed that the level of education was an influencing factor for stigma but not for discrimination. Furthermore, a decrease in age and an increase in experience led to significant improvement in stigmatisation and discrimination towards mental illness.

Previous studies had shown that gender is one of the predictors of stigma^{21,22} and discrimination^{13,14} towards mental illness. However, this relationship was not found in this study. In other studies, Bedaso et al.²¹ and Poreddi et al.²³ revealed that females were more stigmatised than males. This contradicts Pascucci et al.²² in Italy, which demonstrated that females are less stigmatised towards mental illness than males. In terms of discrimination, Li et al.²⁴ revealed that gender did not affect discrimination. Meanwhile, Chan et al.¹³ found that female respondents discriminate against people with mental illness, which contradicted Evans-Lacko et al.¹⁴.

The level of education highly influenced stigma towards mental illness but not discrimination in this study. Respondents with a higher level of education tend to have a lesser stigma. In other words, mentally ill patients were more accepted among more educated people in the community. The possible reason might be that people with higher education might gain more mental illness information, leading to a deeper understanding of this illness and lesser stigma. However, the finding contradicted Reta et al.¹⁷ and Bedaso et al.²¹, which found that higher educated people had higher social restrictiveness views on people with mental illness.

Age was found to have a positive linear effect on stigma and discrimination toward mental illness in this study, which means people with an increase in age would have greater stigma and discrimination. This might be because older people gained more trouble dealing with mental illness people and tend to discriminate. However, this finding was not consistent with Li et al.²⁴ in China and Hsiao et al.²⁵ in Taiwan. Moreover, Chan et al.¹³ and Toner et al.²⁶ demonstrated that age did not significantly discriminate mental illness. Other studies also found that age did not affect the stigmatised attitude^{17,21,23}.

This study also revealed that greater experience with the mentally ill patient would lead to lesser stigma and mental illness discrimination. People with experience logically will gain understanding and acceptance of the mentally ill patient. However, this finding is not consistent with Reta

et al.¹⁷, which showed that people with less experience with mentally ill patients were less discriminated. Previous studies also did not show any relationship between experience and discrimination towards mentally ill patients^{26,27}.

There are some limitations to this study. Firstly, the cross-sectional nature of the data, which is not a causal relationship of the findings. The associations found from the analysis support the hypothesis that education, age and experience affect the stigma and discrimination toward mental illness. Secondly, since the information collected used a self-report method, there might be some respondents' information bias. Although the finding can be generalised to the general population, the non-respondents may have different influencing factors to stigma and discrimination toward mental illness.

CONCLUSION

From this study, level of education was a significant predictor, with less-educated respondents being more stigmatised and discriminated toward the mentally ill patients. Furthermore, age and experience also affected stigma and discrimination towards mental illness. Future research using alternative methods might obtain a more accurate finding of stigma and discrimination toward mentally ill patients and their influencing factors. Efforts to challenge this stigma and discrimination through targeted anti-stigma campaigns and public education are essential. Nevertheless, the study findings here would be useful to guide further studies and general actions before it could be applied in designing effective programs to undertake further strategic actions.

Conflict of interest

The authors declare no potential conflict of interest.

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