ORIGINAL ARTICLE

Non-health Sciences Students' Awareness and Stigma of Autism Spectrum Disorder (ASD): A Cross-sectional Study

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ABSTRACT

Introduction: Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder associated with poor social contact, communication, and recurring behavioral habit. People's acceptance and awareness have been recognized as critical factors for autistics to be integrated into the communities because autistics are often stigmatized. The degree of ASD knowledge in Malaysia is still unclear, and ASD studies in non-health sciences or non-medical background people remain scarce. Therefore, this study aimed to determine the level of awareness and stigma towards ASD, focusing on the non-health sciences students in Universiti Teknologi MARA (UiTM), Selangor. **Methods:** A cross-sectional online survey was conducted on 375 respondents from non-health sciences students in UiTM Puncak Alam, Selangor. The students were given a validated questionnaire to obtain demographic data and assess their awareness and stigma towards ASD. Awareness and stigma levels were then correlated. Any significant difference between the levels of awareness and stigma with demographic data was determined. **Results:** The awareness and stigma levels were slightly higher than average, and there was a weak negative correlation between awareness and stigma levels. There was no significant difference between demographic data and the levels of awareness and stigma. **Conclusion:** The non-health sciences students were marginally aware regarding ASD. However, the negative and poor association between the awareness and stigma towards ASD may suggest that some respondents still have a stigmatic attitude towards autistic individuals. Education regarding ASD is needed in improving awareness among non-health sciences students in the university.

Key words : Awareness, Stigma, Autism Spectrum Disorder, Students, Cross-sectional

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a persistent neurodevelopmental disorder marked by disrupted social communication and constrained interaction, and recurrent patterns of behavior, interests, or activities (1). The causes of autism are multiple as it is closely related to gene mutation and environmental factors during fetal development (2). Some symptoms range from mild to severe; some are intellectually sound, while some may require life-long treatment (3). Symptoms of autism may differ at different ages and depend on their neurodevelopmental process (4). Parents of children with ASD usually notice that their children do not behave like typical children at the age of fifteen to nineteen months (5).

Center for Disease Control and Prevention (CDC) reported an increase in cases of ASD at 1 in 54 children in 2016, compared to 1 in 60 just two years before (6). People with autism display invisible signs, the rise in cases of ASD was reflected as an advancement in diagnosis (7). Most ASD studies were conducted in

developed countries such as the United Kingdom and the United States, so large-scale awareness campaigns sponsored by several agencies have raised public awareness of ASD (8). World Autism Day on 2 April is a popular initiative to raise awareness, engage ASD patients, and offer education to the world's communities (9).

The number of autistic people has been increasing throughout the years in Malaysia. Currently, it is estimated that there are around 300,000 autistic individuals in Malaysia (10). In 2006, approximately 1.6 out of 1000 children aged 18 to 36 months were diagnosed with ASD by the Ministry of Health Malaysia (11).

There is no specific medicine to cure ASD (12). Drugs such as antipsychotics and anti-depressants do not treat the primary causes of ASD. Still, the drugs reduce aggressiveness and anxiety, which is beneficial for a temporary period (13). However, early diagnosis and intervention can significantly enhance the therapeutic outcome in autistic people. Special education programs, occupational therapy, and intensive treatment can help autistic people regain their self-care ability, social and career skills for a better quality of life (14). On the other hand, a late diagnosis, which results in a delay in getting treatment, can increase long-term complications. Therefore, early diagnosis and intervention are essential to significantly improve autistic people's communication and behavior (15).

Definition of awareness is a concern with knowledge, while stigma is disapproval or discrimination of perception towards situation and condition. Lack of awareness regarding ASD leads to treatment delay and stigmatization towards autistic people. Consequently, they may struggle to access healthcare services and participate in the community (16). Many people misunderstand individuals with ASD and tend to judge their behaviors as problematic and unwilling to interact with them (17). Recent studies show that college communities may be aware of certain features of ASD, such as the requirement for individualized treatment but are less aware of other features of ASD. It is reported that even though college communities may be aware of the feature of ASD, the misconception towards ASD and stigmatizing views towards autistic people are still common (18).

ASD understanding among Malaysian is still low due to the lack of studies about ASD, especially from non-health and medical areas (19). Hence, an effort was made to extend awareness and avoid stigmatization towards autistic people among university students. This young generation will be the future workforce responsible for individuals with ASD's livelihood in various settings (20).
Therefore, we aimed to determine the level of awareness and the stigma towards ASD among non-health sciences students in Universiti Teknologi MARA (UiTM) Selangor. The association between awareness and stigma levels was examined. Any significant differences between awareness and stigma with demographic variables such as gender, age, faculty, year of study, education level, and experience with an individual ASD were explored.

We hypothesized that non-health sciences students have a lower awareness level and higher stigma towards autistic people as non-health science students would have less knowledge of ASD. A significant difference between demographic groups and a strong association between awareness and stigma level were also predicted from this study.

This study's findings can be used to improve awareness, which reduces stigmatization towards ASD in preparing forthcoming personnel who may provide services to autistic individuals and leads to better access to treatment and acceptance in public.

MATERIALS AND METHODS

Sample Selection

A cross-sectional online questionnaire-based study was conducted among non-health sciences students in Universiti Teknologi MARA, Puncak Alam Campus, Selangor, from August 2019 to December 2019. The study was conducted to assess awareness and stigma associated with ASD. A sample size of 375 was calculated using Raosoft Software and was targeted in the study. In total, 375 students were able to complete the questionnaire distributed, giving a response rate of 100%.

The inclusion criteria were non-health sciences students currently in full-time degree and diploma programs and literate in English. The exclusion criteria were health sciences, students, and staff.

The students gave their informed consent before completing the questionnaire given. The respondents completed a demographics questionnaire followed by a questionnaire assessing their awareness and stigma towards ASD. The adapted Autism Awareness Survey and Social Distance Scale were used to assess awareness and stigma towards ASD.

Demographic Questionnaire

Participants are required to complete their demographic details, including gender, age, education level, faculty, year of study, and experience with an autism spectrum disorder (ASD).

Autism Awareness Survey

The adapted Autism Awareness Survey consisted of 12 questions (18). The assessment measures the respondent's level of awareness towards ASD and is scored based on

the 5-point Likert Scale. The scale ranged from -2 to 2, with a score of -2 indicating 'strongly disagree' and 2 indicating 'strongly agree'. The total score ranges from -24 to 24; a higher score indicates a higher awareness level. The internal consistency reliability by Cronbach alpha of this assessment is 0.66.

Social Distance Scale

An adapted version of the Social Distance Scale was used to assess stigma towards ASD (21). This assessment consisted of 6 questions that measure the respondent's willingness to engage with autistic individuals at different intimacy levels. The assessment was scored based on a 4-point Likert scale, which ranges from 1 to 4. Score 1 indicates 'definitely willing' and score 4 'unwilling.' The total score ranges from 6 to 24, with a higher score indicating higher stigma toward ASD. The internal consistency reliability by Cronbach alpha of this assessment is 0.87.

Data Analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS version 25.0). The levels of awareness and stigma among the respondents were computed using descriptive analysis. The Spearman's rank correlation coefficient was used to identify if there is an association between the level of awareness and stigma. Independent t-test and one-way ANOVA were used to analyze the data to determine any significant difference between awareness and stigma with demographic data. A p-value of less than 0.05 was considered significant.

RESULT

Demography

The age of the respondents ranged from 18 to 26 years old. Three hundred ten respondents were females, while the rest were males. The study population was mainly comprised of students aged 21 years old (34.1%, n = 128), followed by 20 (18.9%, n = 71) and 19 (18.4%, n = 69) years old.

The respondents included bachelor degree and diploma students, with bachelor degree students dominating (96.3%, n = 361). Respondents from the Faculty of Business and Management were the highest (37.9%, n = 142), followed by Education (25.9%, n = 97) and Accountancy (15.2%, n = 57). Regarding the year of study, most of the respondents were in their first year of study with a percentage of 34.4% (n = 129), followed by students in their third and second year of study with a percentage of 27.2% (n = 102) and 26.9% (n = 101) respectively.

Among the category of having experience with ASD, most participants responded: "No" (48.5%, n = 182) followed by "Yes" (36.8%, n = 138) and "I don't know" (14.7%, n = 55).

Awareness and Stigma towards ASD

Table I illustrates the outcome of awareness level and stigma among the respondents. 0 mean point indicates the mid-point of the scale range and equivalent to neutral answers for the awareness descriptive analysis. The awareness level represented by the mean score is slightly above the mid-point, which is a 1.73 mean score, indicating that non-health science students were mindful and alert with ASD patients.

The Social Distance Scale's total score ranged from 6 to 24, with lower scores indicating lower stigma towards people with ASD, 12 being the midpoint of the range. The mean score is 13.18, which indicates that the non-health sciences students were moderately stigmatized towards ASD patients.

Table I: ASD awareness and stigma mean scores and standard deviation (n=375)

Non-Health Science Students		
Variables	Mean	SD
Awareness towards ASD	1.73	3.74
Stigma towards ASD	13.18	3.15

Association between Awareness and Stigma Level

A Spearman's rank correlation coefficient was calculated to evaluate the association between awareness as the independent variable and stigma level as the dependent variable. Table II shows a significant inverse correlation (p-value < 0.001) between awareness and stigma level towards ASD. The correlation coefficient (r2) is -0.180, which indicates a negative and weak correlation between awareness and stigma level towards ASD. The negative correlation means the respondents were aware of ASD, and the stigma level towards ASD peoples is decreased. Nevertheless, the weak correlation means not all respondents who were aware of ASD would have a low stigma towards ASD patients.

Table II: Association between awareness and stigma level (n=375)

Variables	Stigma level	P-value
Awareness level	- 0.180[a]	<0.001

[a] Spearman's rank correlation coefficient

Awareness and Stigma Levels between Age, Education Level, Year of Study, and Experience with ASD

One-way ANOVA was used to determine any significant difference in awareness and stigma level between age, education level, faculty, year of study, and experience with ASD. Table III shows that there is no significant difference between age (F (7; 367) =1.153, P = 0.33), faculty (F (5; 369) = 1.41, P = 0.22), year of study (F (4; 370) = 1.83, P = 0.83) and experience with ASD (F (2; 372) = 2.81, P = 0.06) regarding their awareness towards ASD.

Similar findings were also found between demographic data with stigma level towards ASD, as stated in Table IV,the p-value is more than 0.05 for all groups.

Table III: One-way ANOVA show no significant finding between demographic variables regarding their awareness level

Variables	F-statistic (df)	P-value
Age	1.15 (7; 367)	0.33
Faculty	1.41 (5; 369)	0.22
Year of study	1.83 (4; 370)	0.83
Experience with ASD	2.81 (2; 372)	0.06

Table IV: One-way ANOVA show no significant finding between demographic variables regarding their stigma level

Variables	F-statistic (df)	P-value
Age	1.48 (7; 367)	0.18
Faculty	1.48 (5; 369)	0.19
Year of study	0.77 (4; 370)	0.55
Experience with ASD	1.46 (2; 372)	0.24

Awareness and stigma Level between Genders

The independent t-test was used to compare the awareness and stigma levels between genders. The result shows no significant difference between males and females (P = 0.58, 95% CI -1.28, 0.72) and (P = 0.45, 95% CI -1.17, 0.52) regarding their awareness and stigma level respectively in Table V.

Table V: The independent T-test show no significant difference between gender with awareness and stigma level.

Variables	Male Mean (SD)	Female Mean (SD)	Mean Differences (95%CI)	t-value (df)	P value
Awareness level	1.49 (3.62)	1.78 (3.76)	-0.29 (-1.29,0.72)	-0.559 (373)	0.58
Stigma level	12.91 (2.96)	13.24 (3.19)	-0.33 (-1.17,0.52)	-0.763 (373)	0.45

Awareness and Stigma between Levels of Education

The independent t-test was used to analyze the awareness and stigma with the levels of education. There was no significant difference between bachelor degree and diploma (P = 0.65, 95% CI -1.54, 2.46) and (P = 0.76, 95% CI -1.95, 1.43) regarding their awareness and stigma levels, respectively.

Table VI: The independent T-test show no significant finding between level of degree with awareness and stigma level.

Variables	Degree Mean (SD)	Diploma Mean (SD)	Mean Differences (95%CI)	t-value (df)	P value
Awareness level	1.75 (3.78)	1.29 (2.52)	0.46 (-1.54, 2.46)	0.45 (373)	0.65
Stigma level	13.17 (3.18)	13.43 (2.38)	-0.26 (-1.95,1.43)	0.30 (373)	0.76

DISCUSSION

In general, most of the respondents were marginally aware of ASD. The respondents' degree of stigma was slightly higher than the mid-range point that did not match the hypothesis. However, the negative and low association between the awareness level and stigma towards ASD may suggest that some of the respondents still have a stigmatic attitude towards ASD patients despite increasing their level of awareness.

The autistic individual may be seen as dangerous because of their aggressiveness and destructive actions, which contributes to social distancing by others (22). The earlier studies conducted in the US demonstrate a strong relationship between awareness and stigma level, which contradicts our findings (18,23). The US studies found that heightened awareness level is associated with lower stigma towards ASD. The reduced stigmatizing attitudes among students may lead to a decrease in social isolation and an increase in the well-being of autistic people.

Our finding stated that there is no significant difference between faculties and the level of awareness and stigma towards ASD, contrary to our hypothesis; we assumed that knowledge acquisition differs between faculties as they have a different syllabus. However, respondents from the Faculty of Pharmacy, a part of the healthcare profession, were expected to have sufficient awareness regarding ASD than other majors. Knowledge and understanding were essentials components for the early diagnosis of ASD. Both components dramatically affect the prognosis for autistic people (24).

Moreover, relevant education also plays a vital role in spending time and has a close relationship with autistic people (25). Students may identify people who are showing autistic traits in the classroom and refer them to the appropriate services for early identification and intervention. Those in the helping profession, like nurses, display less stigmatizing attitudes towards autistic people (20). They are more willing to engage with autistic people as they may have more likelihood to interact with people with ASD. Although there was no significant difference between faculties, the faculties' highest mean score might indicate that the students might have exposure regarding ASD in their program syllabus.

Gender perspectives in our finding show the level of awareness and stigma towards ASD between males and females resulted in no significant difference. The outcome contradicted several previous studies that reported that ASD awareness is more significant among

females than males (8,26,27). A similar study mentioned that female has lower stigmatizing attitude compared to male (18). Based on these previous studies, it seems that females have more empathy and emotional concern than males. A psychologist found that women showed higher activation in the emotional area of the brain (28). The uneven gender distribution between females and males in our study may contribute to the lack of significant findings among gender.

A study from Southwestern United Nations (26) revealed a significant difference between the year of study as the awareness level increased. The result was also in line with a study involving medical students in Karachi (29). The level of awareness and knowledge consistently increased from year one to year four. As students reached their final year, total hours in lectures and clinical attachment provide them with insight into ASD. In contrast, our finding indicates no significant difference in the levels of awareness and stigma between the years of study. We assumed the bachelor degree students, who were older than the diploma students, would have a higher awareness level than diploma students. Nonetheless, the data collected contradicted the previous study, which found that the awareness level is linearly associated with age (26). This outcome provides an answer to the lack of awareness and knowledge implementation regarding ASD or other disabilities regardless of education level and year of study.

People who have experience with ASD manifested higher awareness level towards autistic people (30), and stigmatizing attitude is reduced among people who have experience with autistic people (18,20). However, no significant difference between having experience with ASD was observed in this study. The result was parallel with a similar study conducted in the United States and Lebanon online (18). The outcome existed as people who have experience with ASD may still recognize autistic people with stigmatizing views while others may not. The finding implies that people may show unwillingness to socialize with autistic people regardless of their awareness or prior experience with autistic people. Other than that, cultural differences and beliefs among the respondents can contribute to the awareness level (31). These elements may be included in the future study as they may influence a specific individual's awareness and stigma levels.

The syllabus in non-health programs may contribute to this study findings. The syllabus content of the subjects studied is unlikely to emphasize knowledge of autism, which may cause a lack of knowledge and awareness towards ASD. Therefore, introducing subjects that have an essential element about ASD will increase students 'knowledge and awareness about ASD. In addition, involving students with social and welfare activities for the ASD group can also increase the awareness, knowledge, and experience of students about ASD and subsequently accept ASDs as part of the community (32).

Internet and libraries are the primary sources of information for students to gain information regarding ASD, which might help them be more aware of ASD. Adequate knowledge among university students may lead to innovation and intervention strategies to improve the behavior and communication of autistic peoples in the community (33).

CONCLUSIONS

Increasing awareness and acceptance of university students towards autistic people is essential as the students will be a part of the nation that may provide a bridge for an autistic individual to be accepted in the community. Strategy and improvement by the university play a vital role in increasing awareness of ASD among university students.

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