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KNOWLEDGE AND ATTITUDE ABOUT AUTISM AMONG FAMILY MEDICINE RESIDENTS IN WESTERN REGION OF SAUDI ARABIA IN THE YEAR 2020

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Abstract:

Aim: *To study the knowledge and attitude of family medicine residents about autism spectrum disorder in postgraduate programs of family medicine in western region, Saudi Arabia.*

Methods*: This cross-sectional study was conducted from January to February 2020 in Al-Madinah, Saudi Arabia. The data were collected through an online questionnaire.*

Results: *Out of 246 family medicine residents, 126 (52.0%) were female, with average age 28.3 (3.1), 91 (37.0%) were R4 and 65 (26.4%) were R3, 112 (45.5%) encountered cases of autism, 13 (5.3%) attend training program, and 38 (15.4%) reported family history of autism. The mean knowledge score was 12.8 indicating average level of knowledge, where 99 (40.2%) had moderate level of knowledge, 79 (32.1%) had poor knowledge, and 68 (27.6%) had good knowledge, 33 (13.4%) had an awareness about specialized Centre for autism in Saudi Arabia, half of the residents had positive attitude towards autism, A significant highest score was found among those who were in higher level of residency (p=0.003), and those who didn't have a family history of autism (p=0.026).*

Conclusion: *Family medicine residents showed average level of knowledge and attitude dealing with autism patients. Were, less than tenth attend training program in child mental health. and less than fifth had an awareness about specialized Centre for autism in Saudi Arabia.*

Recommendation:

Decision makers and administrators in colleges and universities requested to give more attention to improve psychiatry curriculum including autism subject.

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1.INTRODUCTION:

Autism is characterized by qualitative impairments in communication and social interaction and by restricted, repetitive, and stereotyped patterns of behaviors and interests. Autism spectrum disorder is a lifelong disease usually diagnosed in childhood between age 2 - 3-year-old and it is triples to four times in boys more than in girls. **(1-3)**

The autism was a rare disease, since the early 1990 the prevalence of autism increases and there is no significant cause of this increasing. This rising could be explained by the improvement in diagnostic criteria, easy accessibility to educational material and increase the community awareness. **(1,3,4)**

The autism prevalence is rising worldwide and according to CDC and WHO its range between 1 in 54 to 160, this varieties in the rates can be explained by the differences in data collected from different age groups, different geographical areas, different research methodologies, and differences in availability of expertise. **(5-7)** The presence of autism was studied in Arab countries, the prevalence of autism was 29 per 10000 in UAE, and in Oman it was 1.4 in 10000, and in Bahrain it was 4.3 per 10000, and in Saudi Arabia the prevalence of autism was 1 to 160. **(8,9)**

The cause of autism is still unknown. There are many factors such as environmental, biologic and genetic factors that make the child more probable to have autism. Moreover, if the child had a family member with autism will had a high risk of having autism. **(2-4)**

The autism my affect negatively the patient and family life. Some of patient with autism can't live their life independently and need a long-life care. It may affect also patient education and social life. On the other hand, some of autistic patients will be able to live their life independently. **(6,10)**

The American academy of pediatrics recommends the screening of autism for all children between age 18-24 months, with specific screening tools. the new evidence from a randomize controlled trials said that an early diagnosis and intervention for a children < 3 years will improve the quality of life of children with autism and their families and reduce the symptoms. **(1)**

The Diagnosis of autism depends on the direct evaluation of social relation skills and repetitive behavior with specific tests of language and cognitive skillfulness, and the diagnosis approved by the DSM-5 criteria for autism spectrum disorder. **(11)**

This study aimed to study the knowledge and attitude of family medicine residents about autism spectrum disorder and associated factors in postgraduate programs of family medicine in western region, Saudi Arabia.

2.DESIGN AND METHODOLOGY:

This is a cross sectional descriptive study conducted among family medicine residents in postgraduate training programs at the western province of Saudi Arabia (Makkah – Almadinah Almunwrah – Jeddah – Taif). Other staff of the programs (trainers or administrator) were excluded.

A sample of 246 residents was chosen randomly from all of the programs using a proportional percentage.

Data collection tool (instrument)

Self-administered questionnaire partially constructed by the researcher with reference to already made non validated questionnaire in another study.

Validity was checked by 7 consultants, and by applying pilot findings and the reliability was calculated.

The questionnaire has 3 sections :

1. Section A contain sociodemographic data which is constructed by the researcher and factors that affect knowledge and attitude.
2. Section B include questions about the knowledge of physicians regarding autism .
3. Section C is a question about the attitudes of physicians regarding autism.

Using monkey survey, the validated questionnaire was sent to all residents in the selected programs.

Data entry and analysis

- Data was entered into a personal computer and it was analyzed using (SPSS) version 23 . All variables were coded before entry into a personal computer and were checked before analysis. Continuous data was presented as mean and standard deviation. Categorical data was presented as percentage and frequency. As Chi-square was used for comparing 2 or more qualitative variables, Student's t-test for comparing two independent quantitative variables and ANOVA test for comparing more than two Independent quantitative variables. A p-value of less than 0.05 and Confidence interval 95% were considered significant.

30 physicians were asked to fill the questionnaire to test its validity, some minor modification was done

according to the pilot study. Pilot records were excluded from the study.

All ethical approvals were obtained (IRB Almadinah, the primary care centers, written consent from participants on the front page of the Questionnaire). All information is confidential.

3.RESULT:

Out of 246 family medicine residents,118 (48.0%) were male and 128 (52.0%) were female, with average age 28.3 range (23-49). Third of the residents 91 (37.0%) were R4 and one quarter 65 (26.4%) were R3. There were 112 residents (45.5%) has encountered cases of autism during their practice. Only 13 residents (5.3%) reported attending a training program on child mental health. Regarding family history of autism this was reported by 38 residents (15.4%). **(Table 1)**

The result revealed that the mean knowledge score was 12.8. This is indicating an average level of knowledge, where 99 (40.2%) had moderate level of knowledge, 79 (32.1%) had poor knowledge, and 68 (27.6%) had good knowledge. Where, the best correct answers were about "Marked impairment in use of multiple non-verbal behaviors" by 95.9%, followed by "Failure to develop peer relationship appropriate for developmental age" 91.5%. Then "Lack of spontaneous will to share enjoyment, interest or activities with other people" 91.1%. And lastly "Lack of social or emotional reciprocity"87.0% , more than two thirds (72.0%) reported the right onset of autism "". While the lowest correct answers were "Autism couldn't be associated with Mental Retardation" by 26.4%, followed by "Autism isn't a neuro-developmental disorder" 27.2%, and "Autism couldn't be associated with Epilepsy" 30.1%. **(Table 2 and Figure 1)**

One hundred eighty-seven of the residents (76%) reported the use of all forms of intervention as the mode of treatment of autism., 67 (27.2%) reported "Special Education", 60 (24.4%) reported "Speech Therapy",43 (17.5%) reported "Referral to Psychiatrist", and lastly, 23 (9.3%) reported "Medication". Less than fifth 33 (13.4%) had an awareness about specialized Centre for autism in Saudi Arabia. **(Figures 2 & 3)**

Regarding the attitude of the residents of the different family medicine postgraduate training programs in west region of Saudi Arabia towards autism. By adding those who agree and those who extremely agree together there are 178 residents (72.4%) agreed that "Primary healthcare physicians can play an active role in the management of autism", 66.3% agreed that "For the diagnosis of autism in children, primary healthcare physicians should refer any suspected case to a pediatrician.",47.9 % agreed that "Autism is difficult to diagnose or manage by primary health care physicians", and lastly 42.2% agreed that "Management of autism is not the job for primary healthcare physicians".

There is a significant association between the level of knowledge of the residents regarding autism and residency level where those who were in higher level of residency (R4& R3) (p-value =0.003). There is a significant association between the knowledge of autism and the presence of family history of autism among the residents. (p-value =0.026). On the other hand, there was no significant association between knowledge level and age, gender, training, encountering, and previous experience. **(Table 3)**

Table (1) Demographic data Of the residents of the different family medicine postgraduate training programs in west region of Saudi Arabia

Variable	N	%
Gender		
Female	**128**	**52.0**
Male	**118**	**48.0**
Total	**246**	**100**
Residency year		
R1	**45**	**18.3**
R2	**45**	**18.3**
R3	**65**	**26.4**
R4	**91**	**37.0**
Total	**246**	**100**
Attend training program in child mental health		
No	**233**	**94.7**
Yes	**13**	**5.3**
Total	**246**	**100**
Encountering any cases of autism during their practice		
No	**134**	**54.5**
Yes	**112**	**45.5**
Total	**246**	**100**
Family history of autism among residents		
No	**208**	**84.6**
Yes	**38**	**15.4**
Total	**246**	**100**

Data were presented as mean (SD) or as number (%)

Table (2) knowledge score of autism among residents of the different family medicine postgraduate training programs in the west region of Saudi Arabia.

Variable	Mean (SD)	Range
Knowledge score	**12.8 (3.2)**	**(00-19)**
Variable	**N**	**%**
Good knowledge (>75%, >14)	**68**	**27.6**
Moderate knowledge (61%-75%, 12-13)	**99**	**40.2**
Poor knowledge (≤ 60%, ≤11)	**79**	**32.1**
Total	**246**	**100**

Data were presented as mean (SD) or as number (%) or as Mean (SD))

Table (3) the relation between knowledge score and demographic data of the residents of the different family medicine postgraduate training programs in west region of Saudi Arabia:

Variable		Mean	SD	P value
Gender ^^	**Female**	**13.0476**	**3.38197**	**0.221**
	Male	**12.5424**	**3.01745**	
Residency $	**R1**	**11.6000**	**2.71695**	**0.003***
	R2	**12.3333**	**3.98862**	
	R3	**12.7231**	**3.30486**	
	R4	**13.6556**	**2.68228**	
Training ^^	**No**	**12.7983**	**3.15376**	**0.958**
	Yes	**12.8462**	**4.16025**	
Encountering^^	**No**	**12.4887**	**3.35662**	**0.095**
	Yes	**13.1696**	**3.00117**	
Family Hx of autism^^	**No**	**12.9952**	**3.18890**	**0.026***
	Yes	**11.7368**	**3.11651**	
Variable	**Knowledge score**		**r**	**P value**
Age &			**0.002**	**0.980**
Previous experience &			**0.002**	**0.979**

Data were presented as mean (SD) or as number (%)
^^ Comparison was done using independent t test
$ Comparison was done using one way ANOVA
& Correlation was done using Pearson correlation
* P value < 0.05 considered significant

Figure 1: Knowledge score of autismof the residents of the different family medicine postgraduate training programs in west region of Saudi Arabia

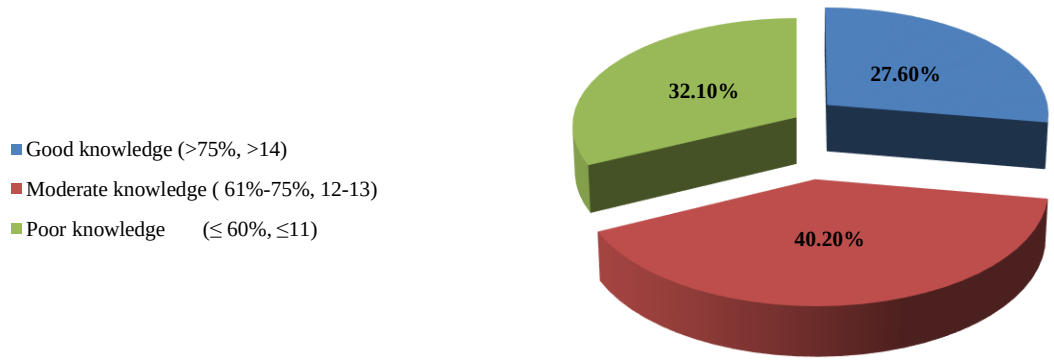


Figure 2: Awareness about having specialized Centre for autism in Saudi Arabia

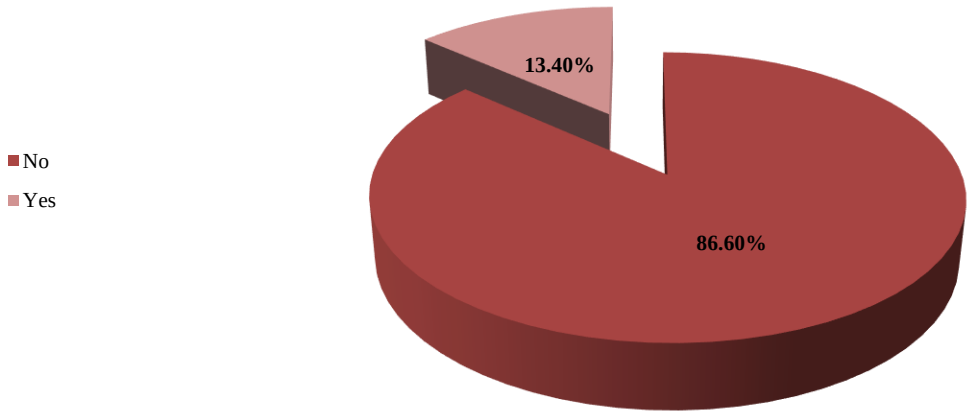
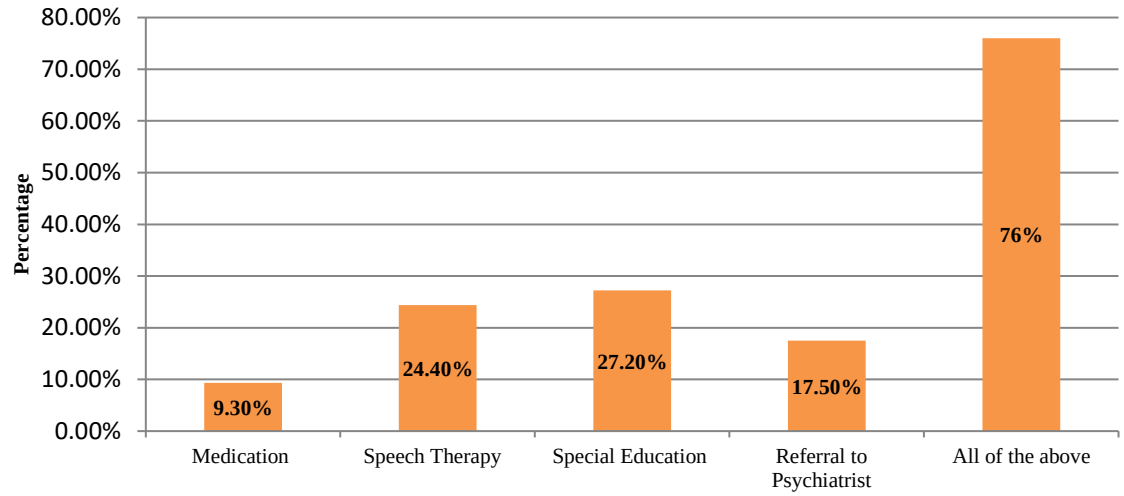


Figure 3: The best intervention



4.DISCUSSION:

Autism Spectrum Disorder is a complex, lifelong and heterogeneous neurodevelopmental disorder described by stereotyped and repetitive behaviors and disrupted social and communication skills. **(3,12)** Family physicians are the first line to provide protective healthcare services and diagnosis and treatment services, and to refer patients to specialist. In another words, family physicians play a key role in the diagnosis of ASD. Consequently, sufficient knowledge of autism is fundamental to family physicians for proper and early diagnosis in children with ASD. On the other hand, poor knowledge of autism delays diagnosis and treatment and lead to Complication of the situation. **(3,12)**

The present study aimed to study the knowledge and attitude of family medicine residents about autism spectrum disorder in postgraduate programs of family medicine in western region, Saudi Arabia.

In this study 27% of the residents showed a good level of knowledge, two third showed moderate level of knowledge, and about one third had a poor level of knowledge.

The low levels of physicians' knowledge regarding autism have been reported by other studies. The study of Altay in Turkey, reported that the answers given by the participants regarding five clinical features of

autism with ASD diagnostic criteria of DSM-5 was found as 54.6 ± 18.4% (median: 60%). **(3)** The study of Eseigbe et al., in Kaduna State, Northwest Nigeria, reported that the mean and median knowledge scores of the participants were 13.5 ± 3.7 and 15, respectively indicating average level of knowledge. **(13)** Rohanachandra et al in-Sri Lanka study reported that the mean scores of knowledges were 13.23/19 (69.1%). **(14)**

Rahbar et al. in their study among a population of general practitioners in Pakistan noted that 44.6% of the doctors had only heard of autism. **(15)** Alshammari et al., in Riyadh, reported that only (10%) answered correctly on more than 50% of the questions. **(12)** Salama, in Egypt, reported that the mean total score of the knowledge questionnaire was 11.2 ± 3.5 indicated average level of knowledge. **(16)** In another recent study, awareness of childhood autism of residents belonging to the non-neuropsychiatric disciplines has been moderate. **(17)** Also, MINA et al in India study, the residents were unhappy with their knowledge about CPI including Autism, and attribute the to the shortage in psychiatry curriculum and training in medical colleges. **(18)** While it is lower in this study as compare to a study of Unigwe et al., in the UK, reported that general practitioners scored high in ASD knowledge with a mean of 88.1%, correct standard deviation [SD] =9.2, range = 36.4-100%. 20 Even with the high level of awareness, health care providers still exhibited misconceptions about autism. **(19)** This result showed that the average level of residents' knowledge regarding autism is a common problem and have been reported by several studies. And the difference in rate could be due to the variety in psychiatry curriculums and residency programs .

In the current study (5.3%) reported attending training program about mental health, while, (45.5%) encountered cases of autism, this result is lower than what was found in the study of Altay., in Turkey, (66.7%) of the participants had not previously received training on ASD and 70.8% of them did not refer any child-to-child psychiatry with suspected ASD in the last 6 months. **(3)** Alshammari et al., in Riyadh, reported that only 28 (10.1%) attended ASD workshops or conferences. **(12)** Salama, in, Egypt, reported that only 15 (21.4%) had been involved with and participated in evaluation and management of children with autism. **(16)** Also, in Sri Lanka study, the authors attributed the good level of knowledge to the extra training program after graduation. **(14)**

Unigwe et al., in the UK, reported that almost two-thirds (63.5%, n = 193) of general practitioners have not received any training on autism during their primary medical degree or specialist GP training. Overall, 39.5% (n = 120) of participants reported to have never received any training about autism. **(19)**

In this study the highest participants' correct answers regarding autism were about "Marked impairment in use of multiple non-verbal behaviors" (95.9%), and "Failure to develop peer relationship" (91.5%). While, the lowest correct answers were "Autism couldn't be associated with Mental Retardation" (26.4%), and "Autism isn't a neuro-developmental disorder" (27.2%). The study of Altay, in Turkey, found that the common features among the participants were the inability to make eye contact (72.9%), repetitive movements (47.9%), delayed speech (47.9%), and not responding to being called (41.7%). **(3)** Rohanachandra et al reported that the highest knowledge was in identification of symptoms related to impaired social interactions (75.8%) and lowest in identification of symptoms of restricted repetitive interests and behaviors (60.8%). **(14)** Eseigbe et al., in Kaduna State, Northwest Nigeria, found that the knowledge of (impairments in communication) had the highest number (123, 73.7%) of participants with maximum score while the knowledge of (characteristics of autism as a disorder and its comorbidities) had the least (18, 10.8%). Maximum scores about (impairments in social interactions) and (obsessive and repetitive pattern of behavior) were obtained by 46 (27.5%) and 58 (34.7%) participants, respectively. The main knowledge gap was regarding comorbidities such as seizures, associated with autism, and the period of onset of the disorder in childhood. **(13)** Hartley-McAndrew et al. in their study on knowledge of autism spectrum disorders in potential first-contact professionals reported that 46% of the professionals were unsure as to whether seizures were commoner (which is a fact) in children on the autism spectrum. **(20)** Also, Imran et al. reported that 43.6% of physicians in their study did not feel that onset before 36 months (a diagnostic hallmark of autism) was necessary for a diagnosis of autism. **(17)** Alshammari et al., in Riyadh, found that the highest correct answer was "The behaviors of autism can only be managed with medications" (77.3%). While, the question with the lowest answer is "people with autism always display challenging behavior" (20.2%). **(12)** The study of Imran et al, in Lahore, Pakistan, found that the highest correct answers were "Social interaction difficulties" (73.2%), and "Lack of social responsiveness" (71.1%). **(17)** Salama, in, Egypt, found domain 2 which Impairments in social interaction had the highest mean score (5.7) while domain 2 which Impairment in communication had

the least (0.7). Maximum scores in Domains 3 (Obsessive and repetitive behavioral pattern) and 4 (Type of disorder autism is and possible associated co-morbidity) were (2.1) and (2.7), respectively. **(16)** Knowledge gaps in this study and other related studies could suggest a deficient autism education in the professional formative years of the health care providers, late diagnosis, and most cases going to psychiatrists. **(13,15,12,16,20)**

In this study regarding intervention ways, 67 (27.2%) reported "Special Education", 60 (24.4%) reported "Speech Therapy",43 (17.5%) reported "Referral to Psychiatrist", and lastly, 23 (9.3%) reported "Medication". While, third fourth of the participants reported all the four main intervention ways. In comparison to Imran et al, in Lahore, Pakistan, reported that psychotropic medications were considered helpful by 70% of respondents. Speech therapy and special educational interventions were found helpful by 75% and 68% of respondents respectively. **(17)**

Findings of the present study showed that participants' knowledge grades regarding autism were significantly better among those in higher residency levels (R4 & R3). This could be due to the fact that older residents (R4 & R3) spend more time in practicing and facing different cases which provide them with more experience than younger residents (R1 & R2). The study of Altay, in Turkey found that trained physicians had significantly better knowledge and were able to refer more patients than physicians without training (70 ± 23.2 vs 56.5 ± 18.1, p = 0.035). Also, those with less experience showed significantly better knowledge than long experience (68.7 ± 18.3 vs 52.2 ± 19.7, p = 0.006). **(3)** In a study by Sabuncuoglu et al., with family physician's family physicians' residents in the education process with a median professional experience of 2-4 years., ASD scale scores were higher in physicians with longer duration of the profession. This was attributed to increased professional experience. **(21)** Rahbar et al., found higher knowledge level about autism in the physicians with a professional experience < 5 years. **(22)** Eseigbe et al., in Kaduna State, Northwest Nigeria, reported a significant association ($P < 0.05$) between good knowledge of autism (KCAHW score ≥15) with male sex, having seen a case of autism, specialist practice particularly the medical subspecialty, and practice in a tertiary health facility. **(13)** Alshammari et al., in Riyadh, reported no statistically significant associations between the score and the physicians' characteristics. **(12)** Unigwe et al., in the UK, found that personal connections of general practitioners with autism affected their scores of knowledge positively (P = 0.001); approximately, 47.7% had personal experiences of autism. **(19)** Salama, in, Egypt, reported a significant positive correlation between the mean KCAHW score and both the duration of practicing and earlier experience of autism. **(16)** Rohanachandra et al found a significant difference in knowledge between medical officers and postgraduate trainees. Which can be explained by the additional training received by postgraduate trainees after completion of the MBBS. **(14)**

Results of the present study showed an average positive attitude towards autism, where more than two thirds stated that "Primary healthcare physicians can play an active role in the management of autism." Imran et al, in Lahore, Pakistan, reported that the main believes among family doctors were; "The lack of awareness regarding autism among professionals in Pakistan" 86.7%, "Autism is under-recognized and often missed in general practice" 85.5%, "Autism can occur in mild as well as extreme form" 84.8%, and "Parental counseling on training techniques is one effective treatment of autism." 76.2%. **(17)** MINA et al in India study, reported that 95% believe that primary intervention holds an important entity in management. **(18)**

These findings indicate the necessity of increasing the awareness level of autism among family medicine residents.

Study Limitations:

There are few limitations: time constraints, lockdown due to Covid-19 epidemic, hospital physicians didn't involve, and the nature of the study didn't allow to measure causation.

5.CONCLUSION & RECOMMENDATION:

CONCLUSIONS

The study sidelight on the average level of knowledge and attitude about autism among family medicine residents in the western region, where only one-fourth of them had good knowledge and half of them had positive attitude. The best correctly identified knowledge among residents was "Marked impairment in use of multiple non-verbal behaviors", while the least correctly identified obstetric danger signs was "Autism couldn't be associated with Mental Retardation". The highest positive attitude among residents was "Primary healthcare physicians can play an active role in the management of autism ." Younger residents (R1 and R2) the lowest knowledge level about autism that older (R3 and R4).

RECOMMENDATIONS

Decision makers and administrators in colleges and universities are requested to give more attention to improve psychiatry curriculum including autism subject. Find new strategies and way to encourage the interns and the residents to look for more information about autism and attend more training program about mental health such as providing extra CME hours. In addition, further nation-wide studies on assessment of residents' knowledge and attitude regarding autism need to be conducted in larger sample size and regions other than western region to identify the level and distribution of different knowledge and attitude grades as well as the areas and topics of knowledge deficits.

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