

Autism Awareness Scale for Security Officers Working in Hospitals: A Study of Validity and Reliability

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ABSTRACT

Objective: The purpose of this study was to evaluate the knowledge and awareness toward autism among security officers working in hospitals and to explore the validity and reliability of the Autism Awareness Scale for Security Officers (AASSO) developed by the researchers.

Methods: This methodological study was conducted at two Government Training and Research Hospitals in Istanbul, Turkey. A total of 135 security officers were included in the study and the data were obtained between February and April 2019. The AASSO is a 4-point Likert type scale and consists of 20 items. The factor structure of the scale was extracted by performing exploratory factor analysis.

Results: Most of the participants were male (n=79; 58.5%) and high school graduates (n=86; 67.7%). Participants considered autism mostly as “a kind of mental retardation” (n=69; 51.9%), followed by “social interaction problem” (n=24; 18.0%). The AASSO reduces autism awareness into 3 factors (‘Coming across’, ‘Communication’ and ‘Interaction with the environment’), with eigenvalues ranging from 9.417 to 1.201 and explained 65.45% of all variance. Cronbach’s alpha values for the AASSO was 0.936 and ranged from 0.921 to 0.809 for the subscales.

Conclusion: According to these results AASSO is a valid and reliable scale. The consequence of further studies especially conducted on non-healthcare professionals of hospitals should be establishing autism-friendly hospitals.

Keywords: Autism, awareness, reliability, scale, validity.

1. INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental condition that has many forms and affects people in varying degrees. Characteristic features include; lack of social interaction and communication, and limited and repetitive behavior patterns in terms of interests and activities (1,2). Although the frequency is unclear, studies have shown that the prevalence of ASD is increasing and has recently found as 1 in 54 (18.5 per 1,000) among children aged 8 years (3). The exact causes of autism are unknown; however, it was concluded that autism is resulting from combination of genetic and environmental risk factors (4).

Autism awareness is important for many reasons both in society and in various professions. Raising awareness about autism will allow recognition of the differences of individuals with autism and ensure the right approach in social areas. Autism is commonly associated with poor emotional control, anxiety and impulsivity (5,6). The challenging behaviors of individuals with autism including aggression to others are frequently observed and not socially acceptable (7,8). Because people with autism cannot hide their minds, can be

overly impulsive and cannot internalize social rules they can often remain in a disorder or debate. In addition, a stressful and controversial environment, such as a hospital, can cause anger and crisis in people with autism. In such cases in the hospital, security officers are the first responders. The officers should recognize autism and the moment of crisis and be able to distinguish it from other situations such as the substance and alcohol addiction crisis. They should be able to manage this moment of crisis by calming the individual with autism and his/her family. Furthermore, in most hospitals in Turkey, security officers are the first personnel individuals having autism meet at the hospital environment. The security officer’s attitude and behaving as a facilitator for them reaching the hospital’s health services may be very important.

Although there are previous studies with community, teachers and healthcare professionals about knowledge and awareness of autism, this subject has not been adequately researched on the security officers (9-12). The aim of this research was to evaluate the knowledge and awareness

toward autism among security officers working in hospitals and to explore the validity and reliability of the Autism Awareness Scale for Security Officers (AASSO) developed by the researchers.

2. METHODS

2.1. Study Design and Participants

The study was designed as a methodological research. The population of the study consisted of 155 security officers working in two Government Training and Research Hospitals in Anatolian side of Istanbul. All security officers who was volunteer to participate in the research were considered eligible for the study. A total of 135 security officers working in these hospitals were participate (response rate=87.1%).

2.2. Data Collection and Instruments

The data of the study were collected between February and April 2019. An anonymous self-completed survey consisted of 32 questions was used for data collection. Before collected the data, a pilot study was done to test the survey with a smaller sample for determine whether questions are interpreting as intended.

The initial question of the survey was a case question describing a typical situation an individual having autism might come across while waiting at the hospital and the security officer's attitude while handling the situation. The English version of initial case question is presented at the appendix. In addition, five questions about sociodemographic characteristics of the participants, two questions evaluating the general level of knowledge on autism and four questions inquiring any experience of the participants with an individual having autism were included in the first part of the survey.

The AASSO was developed by researchers to measure autism awareness level of security officers working in hospitals. It is a 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree) and consists of 20 items. The total scores of respondents vary from 20 to 80, and higher scores indicate better level of awareness.

2.3. Ethical Statement

Ethical approval for the study was obtained from the Ethics Committee of Zeynep Kamil Women and Children Diseases Training and Research Hospital (19/12/2018 – 159) and research permissions were taken from the Health Promotion Unit of Istanbul Provincial Health Directorate. Our study was conducted according to the Declaration of Helsinki and written informed consent was obtained from all participants.

2.4. Statistical Analysis

The statistical analysis was carried out by using IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, N.Y.,

USA). Sample characteristics are presented as frequency tables and mean \pm standard deviation values. Exploratory factor analysis was performed on the scale items to determine the construct validity of the AASSO. Factors were extracted by using eigenvalue-one criterion. The Kaiser-Meyer-Olkin measure of sampling adequacy and the Bartlett's Test of Sphericity were calculated to verify the suitability of applying the factor analysis to the data. The internal consistency was measured using Cronbach's alpha, item-total correlations, and the mean inter-item correlation. Correlations between the AASSO and the subscales were examined using the Spearman's rank correlation coefficient.

3. RESULTS

Sociodemographic characteristics of the participants are presented in Table 1. Most of the participants were men (n=79; 58.5%) and high school graduates (n=86; 67.7%). The mean age of participants was 34.43 ± 6.76 years. A high fraction of participants stated that they have ever heard of the word of autism (n=128; 95.5%) and they saw an individual with autism (n=93; 68.9%). In addition, twenty three participants (17.0%) stated that they have a relative with autism.

Table 1. Characteristics of the Participants

		n	%
Gender	Female	56	41.5
	Male	79	58.5
Age (years)		34.43 \pm 6.76*	
Graduate	Elementary school	2	1.6
	Junior high school	23	18.1
	High school	86	67.7
	University	16	12.6
Working experience as a security officer (years)		6.12 \pm 3.90*	
Working experience in current hospital (years)		4.30 \pm 2.97*	
Ever heard of autism	Yes	128	95.5
	No	4	3.0
	Do not know	2	1.5
Family member with autism	Yes	23	17.0
	No	111	82.2
	Do not know	1	0.7
Anyone with autism in close social circle	Yes	34	25.2
	No	94	69.6
	Do not know	7	5.2
Ever saw an individual with autism	Yes	93	68.9
	No	38	28.1
	Do not know	4	3.0

* Mean \pm standard deviation

The most common answer of the participants for describing the character in the initial case question was "autism" (n=66; 50.0%), which has been followed by "mental retardation" (n=48; %36.6). An important fraction of the participants answered the onset symptoms of autism show up "between

the ages of 0-1" (n=64; 47.8%). Most participants considered autism as "a kind of mental retardation" (n=69; 51.9%) and "social interaction problem" (n=24; 18.1%) (Table 2).

Table 2. Participants' Answers to Knowledge Questions About Autism

		n	%
Case question	Autism	66	50.0
	Mental retardation	48	36.4
	Do not know	8	6.0
	Alcohol or substance abuse	5	3.8
	Conversion	3	2.3
	Other	2	1.5
Definition of autism	A kind of mental retardation	69	51.9
	Social interaction problem	24	18.0
	Strange repetitive behaviors	21	15.8
	Speaking problem	7	5.3
	Other	12	9.0
Onset symptoms of autism show up	Between the ages of 0-1	64	47.8
	Between the ages of 2-5	61	45.5
	Between the ages of 6-12	7	5.2
	Between the ages of 12-18	2	1.5

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.864 and the Bartlett's Test of Sphericity ($\chi^2=1753.83$, $p<0.001$) was statistically significant, supporting the factorability of the data. According to the principal factor analysis with varimax rotation were extracted 3 factors with eigenvalues greater than 1.0 ranging from 9.417 to 1.201. These 3 factors explained 65.44% of all variance. Factor 1 (*Coming across*) explained that 47.09% of the total variance and contained 8 items regarding the events and observations experienced by the security officers when they come across with an individual having autism. Factor 2 (*Communication*) contributed to the explanation of 12.36% of the total variance and had 7 items about the communication problems, which may be experience between the security officers and an individual with autism. Finally, factor 3 (*Interaction with the environment*) explained 6.00% of the total variance, contained 5 items regarding the interaction of an individual having autism with his/her environment (Table 3).

Table 3. Factor Structure of the Autism Awareness Scale for Security Officers (AASSO)

		Factor*			Item-Total Correlation
		1	2	3	
Factor 1: Coming across with an individual having autism					
1.	They may say stereotypic words/sentences again and again, as they talk themselves.	0.825	0.217	0.091	0.701
2.	A child with autism may swing his/her hands like a bird clapping its wings.	.796	.275	.010	.685
4.	They may scream and act rapidly.	.771	.237	.221	.726
7.	They may play with a toy/thing continuously by shaking or turning.	.760	.275	.257	.759
5.	A child with autism may shake himself/herself for a long time.	.746	.308	.157	.731
6.	A child with autism may stare blank.	.728	.379	.193	.777
3.	A child with autism may turn around himself/herself and on his/her toe.	.695	.341	-.018	.645
8.	They may be bored during waiting in line.	.599	.429	.295	.749
Factor 2: Communication with an individual having autism					
11.	They will not response when they are called by their name when they are with other people in public.	.190	.824	-.020	.565
10.	They may have trouble by understanding what people say to them.	.292	.769	.108	.662
9.	They may have trouble by expressing themselves.	.347	.738	.113	.683
12.	They may have trouble when they communicate with people with signs and body language.	.432	.612	.241	.723
13.	They have trouble by establishing eye contact with people.	.458	.600	.256	.743
14.	They may response to questions by repeating them like as parrot.	.444	.596	.174	.699
15.	Their voice may be thin and monotonic like a robot.	.497	.587	.121	.712
Factor 3: Interaction with the environment of an individual having autism					
18.	They do not like to be touched during tantrums.	.033	-.040	.889	.305
17.	They may overreact to cry of baby, ambulance sounds, or hums/murmurs and they may experience emotional breakdowns/tantrums.	.028	.013	.839	.315
19.	If they are taken to a quiet room during their tantrum, their rage reduces rapidly.	.242	.112	.724	.473
16.	They may be uncomfortable in loud places and they do not want to hear voices.	.134	.192	.678	.432
20.	A child with autism may do wrong things to reach a specifically desired object without considering the criminal element of his/her behavior.	.199	.329	.571	.512

*Principal component analysis with orthogonal varimax rotation. Bartlett's Test of Sphericity was $\chi^2 = 1753.83$, $p < 0.001$ and Kaiser-Meyer-Olkin was 0.864; Cronbach's alpha = 0.936 (0.890 for Factor 1; 0.921 for Factor 2; 0.809 for Factor 3); Total variance explained 65.45% (47.09% Factor 1; 12.36% Factor 2; 6.00% Factor 3); Eigenvalues for the three factors were 9.417, 2.471, and 1.201, respectively.

The item-total correlations were ranging between 0.305 and 0.777 and the mean inter-item correlation was 0.423 of the 20-item AASSO. The Cronbach's alpha value for the scale was 0.936 and ranging from 0.921 to 0.809 for the subscales (Table 3). The AASSO subscales were highly or moderately correlated with the total scale score (*Coming across*: $r=0.924$, *Communication*: $r=0.928$, *Interaction with the environment*: $r=0.478$) and correlated with each other (*Coming across* and *Communication*: $r=0.795$, *Coming across* and *Interaction with the environment*: $r=0.330$, *Communication* and *Interaction with the environment*: $r=0.317$) (Table 4).

Table 4. Correlations between the Autism Awareness Scale for Security Officers (AASSO) and the subscales

	AASSO	Coming across	Communication	Interaction with the environment
AASSO	-	0.924**	0.928**	0.478**
Coming across	0.924**	-	0.795**	0.330**
Communication	0.928**	0.795**	-	0.317**
Interaction with the environment	0.478**	0.330**	0.317**	-

* Spearman's rank correlation coefficient; ** $p<0.01$

4. DISCUSSION

In this methodological study, most participants having heard the word autism before and having encountered with an individual having autism before. Although the majority of the respondents correctly answered as 'autism' to the initial case question, there was a similar frequency of those who stated, 'mental retardation'. In addition, most participants stated, 'a kind of mental retardation' as the definition of autism instead of 'social interaction problem'. Autism is characterized by social skills deficits, stereotypical behaviors and difficulties in communication and does not have to be with mental retardation. However, a recent study stated that 33.4% of children with ASD were classified in the range of intellectual disability (intelligence quotient [IQ] ≤ 70) and 24.1% were in the borderline range (IQ=71–85) (3). The level of knowledge about the relationship between autism and mental retardation has been questioned in different ways in the literature. In a community awareness study, only 19% of respondents agreed to the phrase 'autism is similar to mental retardation', whereas, approximately half of respondents thought 'autism is a learning and mental disorder' in another study on primary school teachers (9,10).

In our study, most participants stated that onset symptoms of autism show up "between the ages of 0-1" which has been followed by "between the ages of 2-5" (47.8% and 45.5%; respectively). Previous studies suggest that symptoms and signs including lack of eye contact, no social smiling or failure to respond to name may predict autism between 6-12 months; however, identification of autism in the first year of life may not be possible in the majority of affected children (13,14). The American Academy of Pediatrics recommended to screening at 18 and 24 months of age for ASD (15). Early

diagnosis is critical because early interventions can provide the best opportunity to promote healthy development and provide lifelong benefits (16,17).

The AASSO developed by us and used in our study was found to be a reliable scale in terms of Cronbach's alpha value (0.936) (18). According to the factor analysis of the data, the model could explain 65.45% of the variance which indicated within acceptable range (19). Factor 1 emphasizes the events which can be experienced by the security officers when they come across with an individual having autism. In a previous narrative, the importance of nonverbal communication in first contact and the desire of the individuals to be recognized, were emphasized (20). If the security officers establish communication with the individual having autism, they may experience the communication challenges defined by the items loaded to factor 2. The communication problems which are experienced by the individuals with autism are well described and may affect social functioning (21,22). The security officers may experience the reactions of the individual with autism defined by the items loaded to factor 3. The reactions of children having autism may range from tantrums to avoidance, thus the management of these reactions in children with autism is challenging (23). Therefore, this model may separate the items according the components of the social interaction between the security officers and individual having autism. All the correlations between the AASSO and subscales were found to be high or moderate. However, the correlations of factor 3 with factor 1 and factor 2 were low (0.330 and 0.317; respectively). This may be the result of while the items loaded on factor 1 and factor 2 are related to interpersonal interactions, items loaded to factor 3 are related to recognize interaction between individual having autism and his/her environment. In our study the mean inter-item correlation was 0.423, which falls in the range of 0.15-0.50 and considered as an acceptable level of consistency (24). Furthermore, item-total correlations of the items were between 0.305 to 0.777, exceeding the benchmark value of 0.30 (25).

The most important novelty of our study is the development of internally valid scale which can be separated into 3 factors, which explain 65.45% of total variance and are loaded with the items explaining various facets of the social interaction between the security officers and individuals with autism. This study is a guidance on issues to be considered in the training of security officers in terms of autism awareness.

The participants' marking autism among other choices as the answers of the initial case question could be interpreted as a bias, and this could not be controlled. This can be a limitation of our study. Conversely, using multiple choice answers for case questions can occasionally be considered being superior to open ended question (26). Thus, in our study we think we used the optimal methods like multiple-choice questions and Likert type of questions to measure the knowledge and awareness of participants about autism. Furthermore, we avoided using open-ended questions thinking the shortage of time of the participants to complete the survey.

5. CONCLUSION

Our results show that the AASSO is a valid and reliable measurement instrument. It inquires autism awareness in this occupational group by reducing it to three main dimensions (*Coming across, Communication and Interaction with the environment*) and gives guidance for detection and improvement of weak points in social interaction of security officers with individuals having autism. Not only security officers at hospitals but also other non-healthcare professionals working at hospitals should be inquired for their autism awareness by conducting further researches. The optimum consequence of these further studies should be establishing autism-friendly hospitals.

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APPENDIX

Case Question: A 14-year-old boy was waiting for examination order at emergency with his family since his brother had a fever. The child had little interest in his environment and repeated himself some words. He had a pensive state. During the waiting, he noticed a man trying to get ahead of his mother on the line and started pulling and kicking his arm. In this case, the man started shouting to call security. The child became more irritable with the noise and started to spin around himself. The security officer tried to calm other individuals and prevent the confusion of the environment instead of stopping the child by using force. After the place became calm the security officer talked with the family members in line and directed them to the required department. The child calmed down in a quiet place.

What do you think could be the diagnosis of the 14-year-old boy mentioned above?

- Substance or Alcohol addiction
- Mental Retardation
- Autism
- Epilepsy Seizure
- Conversion Disorder
- I do not know.
- Other (please specify)