



**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICINE
DEPARTMENT OF PEDIATRICS AND CHILD HEALTH**

**ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE OF
PEDIATRICS RESIDENTS ON AUTISM SPECTRUM DISORDERS IN
THREE SELECTED TEACHING HOSPITALS, IN ADDIS ABABA,
ETHIOPIA, 2021**

BY: Dr. SELAMAWIT HIZKIEL (MD, PEDIATRICS AND CHILD HEALTH RESIDENT)

A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRICS AND CHILD HEALTH AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE SPECIALTY CERTIFICATE IN PEDIATRICS AND CHILD HEALTH.

OCTOBER, 2021
ADDIS ABABA, ETHIOPIA

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ACRONYM

AAU.....	Addis Ababa University
AOR.....	Adjusted Odds Ratio
ASD	Autism Spectrum Disorder
CI.....	Confidence Interval
DSM.....	Diagnostics and Statistical Manual
KAP.....	Knowledge Attitude and Practice
KCAHW.....	Knowledge about Childhood Autism among Health Worker
OR.....	Odds Ratio
SPMMC.....	Saint Paul Millennium Medical College
SPSS.....	Statistical Package for Social Science
TASH.....	Tikur Anbessa Specialized Hospital

ABSTRACT

Background:- Autism spectrum disorders (ASD) is a spectrum of neurodevelopmental disorders occurring early in childhood that is characterized by persistent deficits in social communication and interaction and restricted, repetitive patterns of behavior, interests, or activities. However, limited knowledge among health care providers, poor community awareness, and a dearth of specialist care services are some of the issues confronting autism.

Objective: - To assess knowledge, attitude and practice of pediatrics residents on autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia

Method: - Institutional based Cross-sectional study was done with facility based self-administered question among pediatrics resident with sample size of 141. The data were entered and analyzed by using SPSS version 25. Data cleaning and screening were conducted exclusively by the principal investigator. Descriptive statistics was employed to summarize the data and data were presented using Tables, Figures and texts. Binary logistic regression model was used and p- value <0.05 was considered as statistically significant.

Result: - In this study 138 participants contributed to a response rate of 97.9%. The overall knowledge, attitude and practice of pediatric and child health resident on autism spectrum disorder were 70%, 59% and 51% respectively. Participants having experience in autism management had 2.6 folds increase in the knowledge than non-experienced participant. Participants having favorable attitude are 6.8 times knowledgeable than participant with unfavorable attitude. The determinant of attitude and practice were participants having formal teaching, learning or training session before on ASD, year of residency, having experience and good knowledge on childhood autism.

Recommendations: -

1. For the residents: - It is important for residents to improve the KAP regarding to ASD as they are future cornerstone for the management of these cases:
2. For the department: this research may be used as a clue and better to develop protocol of standard autism assessment to increase the level of KAP on medical studies on ASD,
3. For the researcher: - suggest to study in all health professionals those involved in ASD management

Key word: - KAP, autism, pediatrics resident, Ethiopia

INTRODUCTION

1.1 Background

Autism Spectrum Disorders (ASD) are pervasive and lifelong neurodevelopmental disorders characterized by impaired socialization, impaired verbal and nonverbal communication, and restricted interests and repetitive patterns of behavior (1). It was first described by the American child psychiatrist Kanner in the year 1943(2). ASD includes Autistic disorder, Asperger syndrome, Rett's syndrome, childhood disintegrative disorder and pervasive developmental disorder not otherwise specified as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (1). This disorder is present since birth. However, its symptoms are gradually noticed after the age of 6 months and become established by age two or 3 years (3).

The most common conditions seen were learning disability, attention deficit hyperactivity disorder, mental retardation, and stuttering. Children suffering from ASD are more likely to have a variety of medical and psychiatric conditions requiring frequent physician visits for preventive, non-emergency and emergency care and are on high medication usage (4).

Autism appears to be one of the fastest growing disabilities in children (5). Prevalence rates have been rising sharply and are estimated to be 1 in 50 amongst children (6). To date, it is still reported that there is no known medical cure of autism.⁵ However, early diagnosis of an autism spectrum disorder is important because evidence suggests that interventions to improve functioning may be more effective in younger children and optimize long-term prognosis (5).

ASD is associated with enormous financial burdens (7), to a far greater extent than that which occurs with other childhood disabilities (8). However, interventions are available, and can be quite efficacious when applied early in development, leading to improved social communication and social interaction, and even increased IQ scores (9, 10). Prompt intervention is crucial since intensive behavioral interventions may have diminished effectiveness in older children (11, 12).

ASD is a spectrum of neurodevelopmental disorders occurring early in childhood that is characterized by persistent deficits in social communication and interaction and restricted,

repetitive patterns of behavior, interests, or activities (13). Early recognition and intervention as well as multidisciplinary specialist care services, which facilitate positive outcomes, characterize the management of autism in developed climes (14).

However, limited knowledge among health care providers, poor community awareness, and a dearth of specialist care services are some of the issues confronting autism in Africa (15, 16). Assessment of the knowledge, attitude and practice of autism encountered in its management among health care providers, especially pediatric resident would help in addressing issues confronting the disorder.

1.2 Statement of the problem

Adequate knowledge and awareness about childhood autism among healthcare workers can ensure early diagnosis in the community and may lead to early interventions (17). However, autism is often not diagnosed until the age of 3-4 years and healthcare providers may lack training to offer parents evidence-based treatment recommendations (18).

Autism has great economic impact both at the family and country level. The cost also varies depending on the involvement of intellectual disability. The costs include expenses for medical, special education, and employment, support and productivity loss (19). Parents are often receiving information from health care professionals on possible red flags seen in their child's development (20)

The lack of knowledge was found to be associated with the period following graduation and it has been suggested that training programmers' on ASD should be a part of the curriculum (21). To address the problems that confronts to health professionals regarding autism improving knowledge, practice and attitude of health professionals has been identified as mandatory.

Training on the diagnosis and identification of autism spectrum disorders, on ways of interacting with individuals and on tools are necessary to identify early warning signs. Despite this the researcher couldn't find any publication on a systematic review that is done in Ethiopia regarding the knowledge and attitude of pediatric resident towards childhood autism. This study explored the knowledge, attitude and practice of pediatrics' resident towards autism at Addis Ababa, pediatric specialty college and university, Ethiopia, 2021.

1.3 Significance of the study

The study is designed to assess knowledge, attitude and practice of pediatrics residents towards autism spectrum disorder. As indicated by different research results Knowledge and attitude of health professionals towards autism has great impact both on the early diagnosis and good prognosis of autism. Despite this in Ethiopia knowledge and attitude of pediatrics residents towards autism spectrum disorder is not well documented.

Therefore, the result of this study will be used as baseline information to other researchers for further study in the area; it can also initiate educational planners to emphasis on autism during curriculum development, Ministry of health and Nongovernmental organizations to facilitate further trainings on it to enhance the knowledge of health providers.

2. LITERATURE REVIEW

2.1 Knowledge on autism spectrum disorder

Study done by Seyhan H, et al in Turkey showed that overall, 98(76.6%) respondents were aware that Autism can be a genetic disorder. According to 122(95.3%) physicians, the most known characteristic of childhood autism was failure to buildup friendship. 120(93.6%) physicians stated that the characteristic of "liking to perform routine activities" was the second in order among children with autism. A child with autism can have repetitive and stereotypical behaviors as a characteristic which is also indicated by 118(92.3%) of the respondents. Moreover, 110(86%) physicians thought that "autism is a neuro-developmental disorder". A child being severely affected by autism can sometimes stare blankly without concentration on a specific object. This characteristic was also well-known to 109(85.2%) respondents (25).

The report of Liu et al indicates that the average score knowledge was 9.49 ± 1.95 (out of a possible total of 14 points), and 84 % of the sample answered more than 50 % of the items accurately (items answered correctly by 50 % or less of the sample are provided). In contrast, on the questionnaire assessing knowledge of ASD, the average score was 5.53 ± 2.06 (out of a possible total of 15 points), and only 17 % of the sample answered more than 50 % of the items accurately (items answered correctly by 50 % or less of the sample are provided) (26).

Study done in Hindu medical doctor revealed that, the mean and median of Knowledge about Childhood Autism among Health Workers (KCAHW) scores of the participants were 13.5 ± 3.7 and 15, respectively. The KCAHW Domain 2 which assesses impairments in communication had the highest number (123, 73.7%) of participants with maximum score while Domain 4 which assesses characteristics of autism as a disorder and its comorbidities had the least (18, 10.8%). Maximum scores in Domains 1 (impairments in social interactions) and 3 (obsessive and repetitive pattern of behavior) were obtained by 46 (27.5%) and 58 (34.7%) participants, respectively. The main item in each of the domains where most participants demonstrated knowledge gap (wrong or do not know response warranting a score of 0). Good knowledge of autism (KCAHW score ≥ 15) among the participants was significantly ($P < 0.05$) associated with male sex, having seen a case of autism, specialist practice particularly the medical subspecialty, and practice in a tertiary health facility (27).

Research which is done in America on knowledge of autism spectrum disorders in potential first contact professionals shows that more than half percent of them answered that social interaction impairment, sensory sensitiveness, and stereotype play is there on autistic patients. Less than half percent of the participants answered that autistic children face language delay, inability to focus on a task, have aggressive behavior and intellectual disability is not related with autism and it is not important for the diagnosis of autism (28).

2.2 Attitude on autism spectrum disorder

A study result from Sweden shows that mental health nurses have poor attitude in which from 83 nurses which are recruited with country council 5.19 % of nurses shows that intension to interact with mental ill individuals 4.59 % have fear and avoidance open minded (29).

Research which is done in Pakistan Lahore on knowledge and attitude of health professionals towards autism shows that more than half percent of physician respond that autism is occur in mild and sever form, autistic child do not show social attachment, children with autism are prone to communicable disorder. while Less than half percent of physicians respond that autism is an emotional disorder, autistic individual developmental, retardation, autism is difficult to distinguish autism from schizophrenia, autism is common in higher socio economic and educational status, autism is lifelong disease that autism is lifelong disease (30).

Research which is done in Buthan with the title of attitude of health professionals towards disability shows that 42.69 nurses are favorable attitude about disability and 25.07 are negative thinker while the rest 25 of them have misconception about the disorder (31).

2.3 Practice on autism spectrum disorder

Study done in Hindu medical doctor revealed fifty-eight (34.7%) participants had seen a case of autism out of whom 20 (34.5%) were general practitioners and 38 (65.5%) were specialists. Mode of diagnosis was by clinical suspicion in 39 (67.2%) of the participants and the use of Diagnostic and Statistical Manual- (DSM-) IV classification by the others (19, 32.8%). The same participants who used the DSM-IV in diagnosis managed their cases while the other 39 (67.2%) participants referred their case to either a pediatrician (22, 56.4%) or psychiatrist (17, 43.6%). Modalities for management employed by the participants were counselling of parents (19, 100%), occupational

therapy (4, 21.1%), treatment of associated seizures (2, 10.5%), and referral to a special education facility (15, 79%). Lack of speech and behavioral therapists was a major challenge in management of autism (27).

2.4 Factors affecting knowledge, attitude and practice of health professionals towards autism

Research which is done in middle income country shows that health care workers in their fourth decade have good knowledge than health care workers younger than them. Those health care workers with less than six years working experience and those with more than twenty years of working experience were likely to have poor knowledge on knowledge questionnaire compared to those with working experience of between six and twenty years in addition to this past involvement of nurses in the management of autism has its own impact (32). Also another Research which is conducted in middle income country shows that work experience has significant relation with the knowledge of autism in which experienced (33).

Research result from Buthan showed that knowledge of nurses has direct impact on the altitude of nurses towards mental illness (34). Research which is conducted in developing country revealed that knowledge and work experience of health professionals towards autism can affect attitude of them (35)

3. Objective

3.1. General objective

- ❖ To assess knowledge, attitude and practice of pediatrics residents towards childhood autism spectrum disorder at Tikur Anbessa specialized Hospital, St. Paul millennium medical college and Yekatit 12 Hospital medical college in Addis Ababa, Ethiopia, 2021.

3.2. Specific objectives

- To assess knowledge of pediatrics residents towards child-hood autism
- To examine attitude of pediatrics residents towards child-hood autism
- To explore the practice of pediatrics residents towards child-hood autism
- To identify the determinant factor of KAP among pediatrics residents towards child-hood autism

4. Methods and Materials

4.1. Study area and period

The study was conducted at three government teaching Hospitals, Tikur Anbessa Specialized Hospital, St. Paul's Hospital Millennium Medical College And Yekatit 12 Hospital, where pediatric residents available.

Tikur Anbessa Specialized Hospital is found in the capital city of Addis Ababa in the Lideta sub city. The hospital opened in 1972, and the largest referral hospital in the country, and serves approximately 370,000- 400,000 patients a year but the exact number is not known. It is one of the largest teaching hospitals in the country providing eight undergraduate and over 70 postgraduate programs. Pediatric services started as a specialized health service provision with the establishment of the Ethio-Swedish Pediatric Clinic (ESPC) at the former Princes Tsehai Memorial Hospital under the headship of Professor Edgar Mannheim. The ESPC and the Ethiopian Nutrition Institute were established in 1957 and 1962, respectively. In 1966 the Department of Pediatrics was established in the Faculty of Medicine, AAU. Pediatric residency program was started in Ethiopia at AAU in 1979 with the objectives of producing Ethiopian specialists to meet the high demand of patient care and teaching staff.

St. Paul's Hospital Millennium Medical College, as it is known today, also located in the capital city of Addis Ababa, was established through a decree of council of ministers in 2010, although the medical school opened in 2007, the hospital was established in 1968 by late Emperor Haile-Selassie. The college initiated Ethiopian's first integrated modular and problem – based curriculum for its undergraduate medical education and is currently expanding to postgraduate programs including pediatric residency.

Yekatit 12 hospital Medical College, is also located in Addis Ababa, and was established in 1923 as one of modern medical service delivery center in the country. After many decades of service delivery, in 2011, it became a medical college by a decision of city government of Addis Ababa. Currently, it is expanding both undergraduate and postgraduate program.

Addis Ababa has three pediatrics specialty teaching colleges. In these three colleges 191 pediatrics residents were enrolled; 93 pediatrics residents in TASH, 75 pediatrics residents in SPMMC and 23 pediatrics residents in Yekatit 12 hospital. The study was conducted from June 1 to August 30, 2021.

4.2. Study Design

Institutional based cross sectional study design was conducted among pediatrics residents in Addis Ababa specialty teaching colleges.

4.3. Population

4.3.1. Source population

Source populations were all pediatrics residents who are working at Tikur Anbessa Specialized Hospital, St. Paul millennium medical college and Yekatit 12 Hospital medical college

4.3.2. Study population

All Pediatric residents who were working in TASH, SPHMMC and Yekatit 12 Hospital medical college, pediatric unit during the study period and willing to participate in the study

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

Pediatrics residents in Addis Ababa University Tikur Anbessa specialized hospital, St. Paul millennium medical college and Yekatit 12 medical college, year of residence

4.4.2. Exclusion Criteria

- Month off at the time of data collection
- On sick leave and maternity leave at the time of data collection
- Unwilling to participate

4.5. Sample Size determination

The total sample were determined by using single population proportion formula by

Considering the following assumptions

Formula: $n = (Za/2)^2 * (1-p)/d^2$

Where: n = the desired sample size

d =5% (maximum margin of error the researcher is willing to allow)

Z=1.96 (standard normal deviation value corresponding to 95% confidence level)

95% confidence level,

P = 50% since no previous study in anywhere else on knowledge, attitude and practice of pediatric resident on identifying childhood autism spectrum disorder.

$$n = (Za/2)^2 * (1-p)/d^2 = \frac{(1.96)^2 (0.5*0.5)}{(0.05)^2} = 384$$

The total number of pediatrics resident in TASH, SPMMC and Yekatit 12 Hospital is 191. So, since this figure is below 10,000, used the following correction formula for the sample size determination:

$$S = n / (1 + n/N)$$

n = sample size for population of size

N = number of pediatric resident in hospitals

$$S = 384 / (1 + 384/191) = 128$$

S=128 adding 10 % (12.7) for non-response rate, Therefore, the required sample size of this study is 128+13= 141.

4.6. Sampling Technique

All the pediatrics resident were involved until the final sample size in the study area

4.7. Data Collection Procedure and Instrument

4.7.1. Data collection instruments

Structured questionnaires, adopted from different literatures, Knowledge about Childhood Autism among Health Worker (KCAHW) guideline and Diagnostics and Statistical Manual (DSM-V) was validated and used to collect data from Pediatrics residents in Addis Ababa University TASH, St. Paul millennium medical college and Yekatit 12 medical college. The questionnaire have four parts. Part one deals about socio economic characteristics of pediatrics resident. Part two deals about knowledge of pediatrics resident towards childhood autism. Part three was related with attitude of pediatrics resident towards childhood autism. Part four were related with practice of pediatrics resident towards childhood autism.

4.7.2. Instrument

Self-administered questionnaires which were prepared in English language were used.

4.8. Study variables

4.8.1. Dependent variables

Knowledge, attitude and practice of pediatrics residents on autistic spectrum disorders

4.8.2. Independent Variables

- Age
- Sex
- Religion
- Marital status
- Year of residency
- Training on autism spectrum disorder
- Work experience
- Previous exposure

4.9. Data Quality control

Three data collectors and one supervisor with the qualification of MPH was trained for one day about the objective of study and ways of handling data. The instrument was pretested with 5 % of the respondents, which was not included in actual study in order to check clarity, understandability and acceptance. Based on the result of the pretest unclear and confused questions were modified accordingly. Data completeness and consistency was checked daily and the collected data was cleaned and compiled by the investigator.

4.10 Data processing and Analysis

The collected data was cleaned and checked for completeness and it was coded and entered to using statistical package for social science (SPSS) version 25. The mean, median and mode score of the total score for pediatrics resident on knowledge, attitude and practice related questionnaire were calculated. Mean scores in relation to the socio demographic variables of pediatrics resident was computed. Statistical mean difference declared at p -value less than 0.05. Frequency and percentage distribution was also computed. The result is displayed using text, table and pie charts.

4.11. Operational Definitions

Good Knowledge - Respondents who score above or equal to the mean score of knowledge related questions.

Poor knowledge - Respondents who score below mean score of knowledge related questions.

Favorable attitude - Respondents who scored more or equal to mean score of attitude related questions.

Unfavorable attitude - Respondents who scored below mean score of attitude related questions.

Good practice - Respondents who scored more or equal to mean score of practice related questions.

Poor practice - Respondents who scored below mean score of practice related questions.

4.12. Ethical consideration

Prior to the study, Ethical clearance were obtained from the Addis Ababa University College of Health Sciences, department of pediatrics and child health ethical review committee. Permission was obtained from authorities of each college. The importance of the study was explained to the participants before recruitment into the study, followed by informed consent by participant. All information which was gained from the pediatrics resident remained confidential. Coding and aggregate reporting were used to eliminate names and other personal identification of respondents throughout the study process to ensure anonymity.

4.13. Dissemination and utilization of results

The result of the study will be disseminated to Addis Ababa University College of health science department of pediatrics and child health, Addis Ababa University

For other concerned bodies through presentation, hard and soft copy. Attempt will be made for publication of the research on reputable Journal

5. RESULT

5. 1 Sociodemographic characteristic of study participants

In this study 138 participants were participated making a response rate of 97.9%. Two-third of the participants were male, orthodox in religion and single. And 95(63.8%) were in the age range of 25-30 years and 1/4th of the participants have children and 64 (46.4%) were year two resident and 89 (64.5%) were saw autistic child during working as GP or resident.

Table 1. The socio-demographic characteristics of study participants on KAP study towards Autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia, 2021.

Variable		Frequency	Percent
Sex of study participants	Male	95	68.8
	Female	43	31.2
Age of study participants	25-30	88	63.8
	31-35	30	21.7
	>35	20	14.5
Religion	Orthodox	96	69.6
	Muslim	29	21.0
	Protestant	13	9.4
Marital status	Single	90	65.2
	Married	44	31.9
	Divorced	4	2.8
Having children	Yes	35	25.4
	No	103	74.6
Year of residency	First	48	34.8
	Second	64	46.4
	Third	26	18.8
Had Formal teaching, learning or training session on autism spectrum disorder	Yes	54	39.1
	No	84	60.9
If, learned or trained for how long	1-2 hours	15	27.8
	2-3 hours	32	59.3
	> 4 hours	7	13.0
Have you gotten autism child during working as GP or resident	Yes	89	64.5
	No	49	35.5

5.2 Knowledge based characteristics of study participants on Autism spectrum disorder

The overall knowledge of study participants on ASD were measured using mean value and the score of mean value were 13.94 ± 3.44 and the knowledge was expressed in the figure below

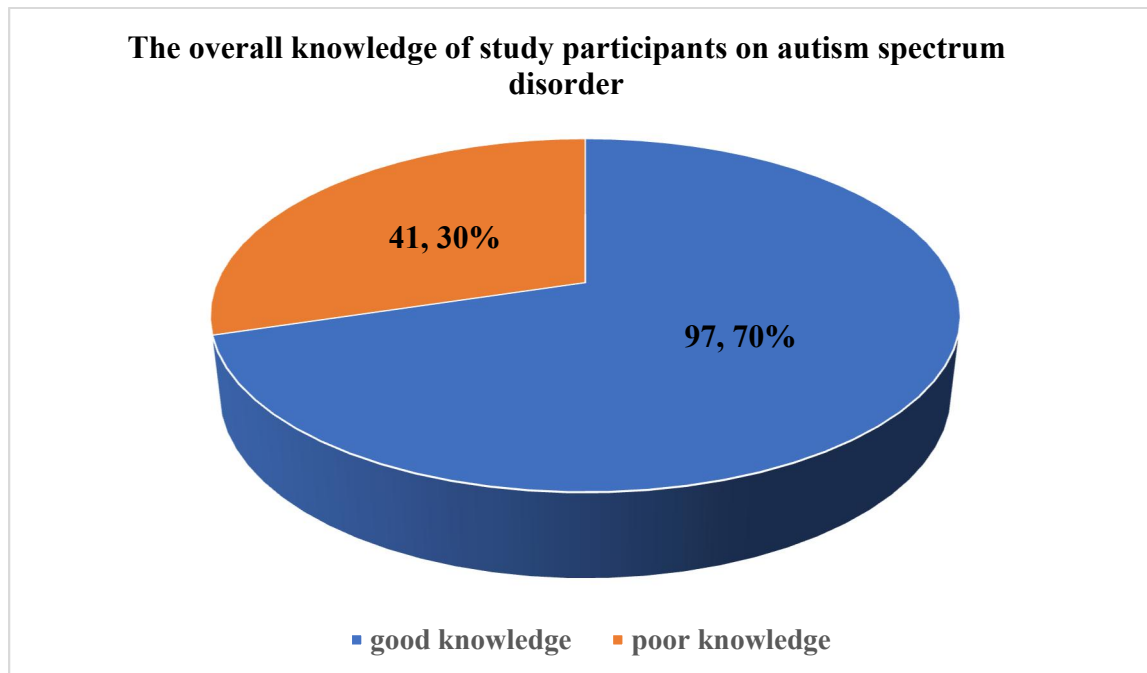


Figure 1. The overall knowledge of study participants on autism spectrum disorder

Regarding to the specific knowledge measurement, 131(94.9%) of participants correctly respond about autism can result in Marked impairment in the use of multiple non-verbal behaviors such as eye to eye contact, facial expression, body postures and gestures during social interaction and 132(95.7%) knows that autism cause Failure to develop peer relationship appropriate for developmental age and 123(89.1%) knows that autism cause for Lack of spontaneous will to share enjoyment, interest or activities with other people as shown in the table below

Table 2. The knowledge characteristics of study participants on KAP study towards Autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia, 2021

Knowledge based variable	Correct response	Frequency	Percent
Does autism result in Marked impairment in the use of multiple non-verbal behaviors such as eye to eye contact, facial expression, body postures and gestures during social interaction?	Yes	131	94.9
Does autism cause Failure to develop peer relationship appropriate for developmental age?	Yes	132	95.7
Does child with autism have Lack of spontaneous will to share enjoyment, interest or activities with other people?	Yes	123	89.1
Does autism child have Lack of social or emotional reciprocity?	Yes	120	87
Does autism child Stare into open space and not focusing on anything specific?	Yes	88	63.8
Does autistic child can appear as if deaf or dumb?	Yes	107	77.5
Does child with autism has Loss of interest in the environment and surroundings?	Yes	115	83.3
Does Social smile is usually absent in a child with Autism?	Yes	69	50
Does autistic child has Delay or total lack of development of spoken language	Yes	93	67.4
Does autistic child has Stereotyped and repetitive movement (e.g., Hand or finger flapping or twisting)?	Yes	110	79.7
Does autism associate with abnormal eating habit?	Yes	86	62.3
Does Autistic child Persistently preoccupied with parts of objects?	Yes	115	83.3
Does Autistic child Love for regimented routine activities	Yes	99	71.7
Does Autism equal Childhood Schizophrenia?	No	93	67.4
Is Autism an auto-immune condition?	No	103	74.6
Autism is a neuro-developmental disorder?	Yes	90	65.2
Autism could be associated with intellectual disability?	Yes	121	87.7
Does Autism could be associated with Epilepsy?	Yes	63	45.7
At what age the Onset of Autism?	childhood	57	41.3
Is autism a curable disease?	No	116	84.1

5.3 Determinant of participant's knowledge about autism spectrum disorder

The strength of the variable was assessed using OR and 95%CI using binary logistic regression model. Accordingly, year of residence, formal teaching, learning or training session on autism spectrum disorder, experience, and attitude were an association with bivariate logistic regression. And the multivariate logistic regression showed that, participant having experience on autism management had 2.6 folds increase in their knowledge than non-experienced participant (AOR=2.6, 95%CI=1.05, 6.63) and participants having favorable attitude have 6.8 times knowledgeable than participant having unfavorable attitude on ASD (AOR=6.8, 95%CI=2.87, 16.37).

Table 3. The bivariate and multivariate logistic regression of dependent and independent variable on knowledge assessment of study participants on KAP study towards autism spectrum disorders in three selected teaching hospitals, Addis Ababa, Ethiopia, 2021.

Variable	Knowledge about ASD		p-value	COR (95%CI)	P-value	AOR (95%CI)
	Good	Poor				
Years of residency						
First	34	14	1		1	
Second	42	22	0.560	0.79(0.35, 1.76)	0.970	0.98(0.38, 2.57)
Third	21	5	0.353	1.7(0.544, 5.50)	0.749	1.2(0.34, 4.47)
Formal teaching, learning or training session on autism spectrum disorder						
Yes	43	11	0.057	2.2(0.98, 4.83)	0.202	1.8(0.73, 4.52)
No	54	30	1		1	
Experience						
Yes	69	20	0.013	2.6(1.23, 5.49)	0.039	2.6(1.05, 6.63)
No	28	21	1		1	
Attitude on ASD						
Unfavorable attitude	30	26	1		1	
Favorable attitude	71	11	0.000	7.5(3.27, 16.97)	0.000	6.8(2.87, 16.37)
Practice on ASD						
Poor practice	45	29	1		1	
Good practice	52	19	0.436	1.3(.64, 2.78)	0.746	0.86(0.34, 2.15)

5.4 Attitude based characteristics of study participant on autism spectrum disorder

The overall attitude of study participants on ASD were measured using mean value score (44.24 ± 7.7) and the attitude were expressed in the figure below

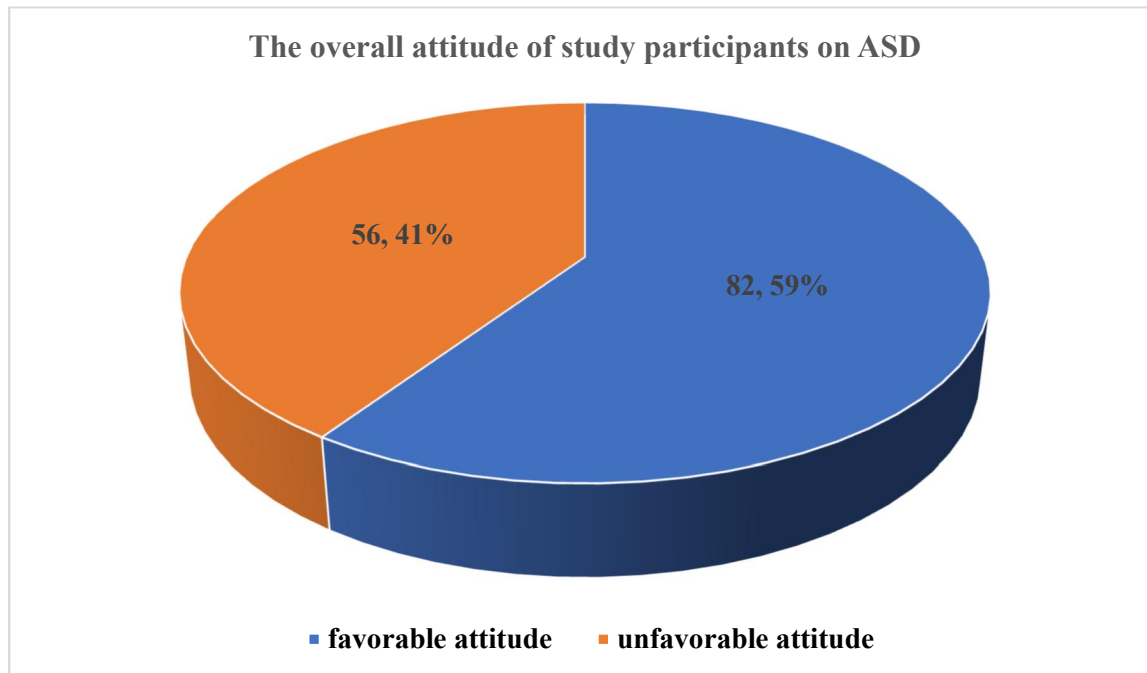


Figure 2. The overall attitude of study participants on autism spectrum disorder

Concerning to the specific attitude measurement, 48(34.8%) agreed on the idea that autism can occur in mild as well as extreme form, 40(29%) agreed on the idea that most children with autism are also intellectually disabled and 41(29.7%) strongly agreed on the idea that Autism is under-recognized and often missed in general practice as shown in the table below.

Table 4. The attitude characteristics of study participants on KAP study towards Autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia, 2021

Variable	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Overall mean
Do you believe that autism can occur in mild as well as extreme form?	20(14.5%)	15(10.9%)	12(8.7%)	48(34.8%)	43(31.2%)	3.57	44.24
Do you believe that Children with autism usually grow up to be schizophrenic adults?	16(11.6%)	29(21%)	52(37.7%)	32(23.2%)	9(6.5%)	2.92	
Do you believe that Autism is an emotional disorder?	12(8.7%)	43(31.2%)	17(12.3%)	54(39.1%)	12(8.7%)	3.08	
Do you think that Most children with autism are also intellectually disabled?	21(15.2%)	41(29.7%)	23(16.7%)	40(29%)	13(9.4%)	2.88	
Do you think that Autism is more common among higher socio-economic society?	16(11.6%)	36(26.1%)	46(33.3%)	34(24.6%)	6(4.3%)	2.84	
Do you think that Autism is a rare condition in Ethiopia as compared to the Western country?	13(9.4%)	57(41.3%)	38(27.5%)	25(18.1%)	5(3.6%)	2.65	
Do you believe that Autism is under-recognized and often missed in general practice?	14(10.1%)	14(10.1%)	9(6.5%)	60(43.5%)	41(29.7%)	3.72	
Do you think that there is a lack of awareness regarding autism among professionals in Ethiopia?	18(13%)	17(12.3%)	1(0.7%)	57(41.3%)	45(32.6%)	3.68	
Do you think that Autism is a communication disorder?	21(15.2%)	23(16.7%)	16(11.6%)	60(43.5%)	18(13%)	3.22	
Do you think that Children with autism do not show social attachments, even to parents?	13(9.4%)	36(26.1%)	13(9.4%)	64(46.4%)	12(8.7%)	3.19	
Do you believe that Autism exists only in childhood?	29(21%)	62(44.9%)	25(18.1%)	20(14.5%)	2(1.4%)	2.30	
Do you believe that with early intervention, the prognosis of individuals with autism is poor?	19(13.8%)	64(46.4%)	18(13%)	25(18.1%)	12(8.7%)	3.38	
Do you agree that Parental counseling on training techniques is one of effective treatment of autism?	9(6.5%)	20(14.5%)	12(8.7%)	61(44.2%)	36(26.1%)	3.69	
Do you believe that Dietary intervention is one of the treatment options?	13(9.4%)	26(18.8%)	40(29%)	52(37.7%)	7(5.1%)	3.10	

5.5 Determinant of participant's attitude about autism spectrum disorder

The odds of association about the attitude of study participants showed that being year two resident 37% less attitude on ASD than year one resident and (AOR=0.37, 95%CI=0.16, 0.87) and the odds of having knowledge on ASD had 4.6 folds increase the attitude than the opposite compartment (AOR=4.6, 95%CI=2.75, 17.39)

Table 5. The bivariate and multivariate logistic regression of dependent and independent variable on Attitude assessment of study participants on KAP study towards Autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia, 2021

Variable	Attitude on ASD		p- value	COR (95%CI)	P- value	AOR (95%CI)
	Favorable	Unfavorable				
Years of residence						
First	32	16	1		1	
Second	31	33	0.056	0.47(0.22, 1.02)	0.023	0.37(0.16, 0.87)
Third	19	7	0.570	1.4(0.47, 3.89)	0.887	0.92(0.29, 2.86)
Formal teaching, learning or training session on autism spectrum disorder						
Yes	37	17	0.083	1.9(0.92, 3.86)	0.348	1.4(0.67, 3.11)
No	45	39	1		1	
Experience						
Yes	56	33	0.260	1.5(0.74, 3.04)	0.725	1.2(0.52, 2.59)
No	26	23	1		1	
knowledge on ASD						
Poor knowledge	11	30	1		1	
Good knowledge	71	26	0.000	7.4(3.27, 16.98)	0.002	4.6(2.75, 17.39)

5.6 Practice based characteristics of study participant's care on autism spectrum disorder

The overall practice of study participants on ASD were assessed using mean value of 8.19 ± 2.6 and those score above the mean value were considered as good practice as shown in the figure below

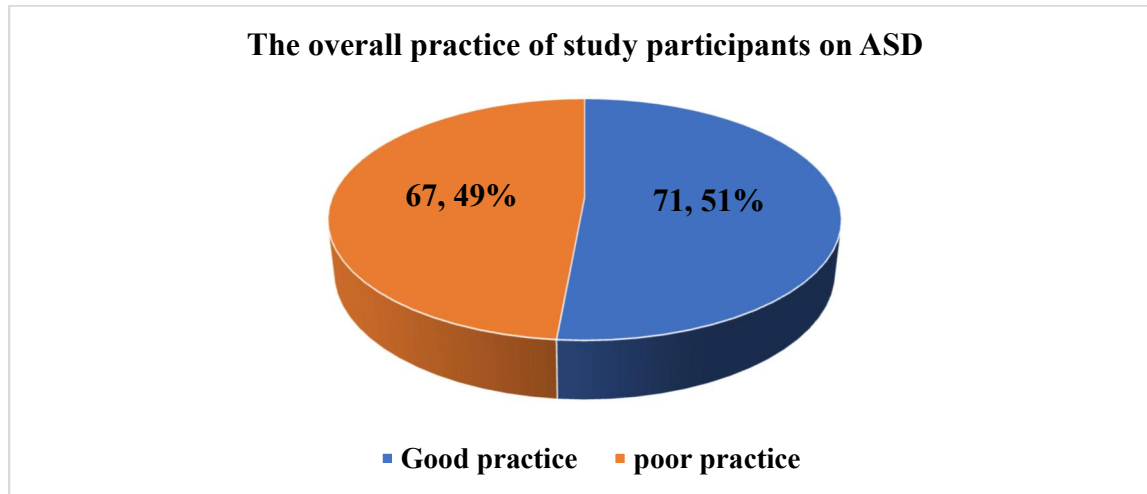


Figure 3. The overall practice of study participants on autism spectrum disorder

The practice assessment part of study participants showed that 120(87%) of participants understand autistic children have limited use of non-verbal behaviors such as eye gaze and body posture to regulate social interaction, 94(68.1%) of participant understand the speech of the autistic children on difficulties in picking up on non-verbal or emotional cues and 101(73.2%) of the participants apply observational study in the diagnosis process and 92(66.7%) of the participants were aware about the presence of center for autism in Addis Ababa.

Table 6. The practice assessment of study participants on KAP study towards Autism spectrum disorder in three selected teaching hospitals in Addis Ababa, Ethiopia, 2021

Variable	Frequency	Percent
Encounter child with autism spectrum disorder	102	73.9
List the diagnostic parameter of ASD		
- Deficits in social communication and interaction	11	8.0
- Restricted, repetitive and stereotyped patterns of behavior	16	11.6
- Symptoms present in early childhood	4	2.9
- Symptoms cause clinically significant impairment in functioning	5	3.6
Ever used DSM-V diagnostic criteria	57	41.3
Apply observation in the diagnosis process	101	73.2
Did you understand the autism children about limited use of non-verbal behaviors such as eye gaze and body posture to regulate social interaction	120	87.0
Did you understand the speech of the autism children on difficulties in picking up on non-verbal or emotional cues	94	68.1
Did you understand the problems understanding spoken language/verbal instructions	83	60.1
Advice Instructional methods for family about to the range of ages, abilities, and learning styles of students with autism	65	47.1
Are your advice Parents and family members are supported as active participants in all aspects of their child's ongoing mental health issue	85	61.6
Are you aware of the presence of center for autism in Addis Ababa	92	66.7
Did you link a child with autism to psychiatric unit, speech therapy before	85	61.6
Did you prescribe anticonvulsant, mood stabilizer, antipsychotic and stimulant medication before	66	47.8
Did you attend any training on autism spectrum disorders	40	29.0
Are you satisfied with your knowledge about autism	33	23.9
Did you wish to improve your knowledge about autism	71	51.4

5.7 Determinant of participants Practice about autism spectrum disorder

According to the multivariate logistic regression report, the female participant has good practice than the male participant, which is 3.3% fold higher (AOR=3.3, 95%CI=1.35, 8.0) and participant who saw autistic child during working as GP or resident had good practice which is 4.6 fold higher than the resident who never encounter autistic child before (AOR=4.6, 95%CI=1.92, 11.07)

Table 7. The bivariate and multivariate logistic regression of dependent and independent variable on Practice assessment of study participants on KAP study towards Autism spectrum disorder in three teaching hospitals in Addis Ababa, Ethiopia, 2021

Variable	Practice assessment		p-value	COR (95%CI)	P-value	AOR (95%CI)
	Good	Poor				
Practice of study participants						
Male	42	53	1		1	
Female	29	14	0.013	2.6(1.23, 5.56)	0.009	3.3(1.35, 8.0)
Level of residence						
First	19	29	1			
Second	35	29	0.115	1.8(0.86, 3.94)	0.361	1.5(0.64, 3.45)
Third	17	9	0.037	2.9(1.07, 7.79)	0.235	1.9(0.65, 5.68)
Formal teaching, learning or training session on autism spectrum disorder						
Yes	35	19	0.013	2.5(1.21, 4.98)	0.053	2.2(0.99, 4.79)
No	36	48	1		1	
Have you gotten autism child during working as GP or resident						
Yes	56	33	0.000	3.8(1.83, 8.09)	0.001	4.6(1.92, 11.07)
No	15	34	1		1	

6. Discussion

In this study, most of the participants 97 (70%) had a “good” knowledge score, 59% of them had “favorable” attitude scores and 51 % of them had ” good” practice regarding the issues related to autism spectrum disorders.

Around 97 (70%) of the participant score “good “in knowledge assessment. This finding was lower than study done by Liu et al, Study done in Hindu medical doctor (26, 27). Though the score is higher but not satisfactory. There was no significant relationship between ages, gender, Marital status, and having own children with knowledge.

In the literature, awareness of ASD has been evaluated in many groups Such as health care workers, psychiatrists, neurologists, family physicians, pharmacists, educators, psychologists, and speech therapists throughout the society (23). Health-care professional’s especially pediatric residents and pediatrician must be aware of the diagnostic criteria and principles of management of Autism spectrum disorder because one of the early medical contacts of children who have not yet been diagnosed with ASD may be with pediatric residents or pediatricians. As first liner the knowledge, attitude and practice of pediatric resident about ASD symptoms is critical for early diagnosis and management.

The finding also indicates that 94.9% of the participants were aware that “Marked impairment in the use of multiple non-verbal behaviors such as eye to eye contact, facial expression, body postures and gestures during social interaction” is sign of ASD and 95.7% correctly answered the cause of autism is Failure to develop peer relationship appropriate for developmental age and 89.1% knows that “autism cause for Lack of spontaneous will to share enjoyment, interest or activities with other people”. This finding was in line with the study done by Seyhan H, et al in Turkey (25). The similarity was may be due to the two study was done in health care providers. The reason for the high rate of correct answers for these questions may be that these findings still maintain their place in the updated diagnostic criteria of ASD. In addition, it may be because they are the most emphasized diagnostic features of ASD in lectures and training sessions about autism.

In this study, participant having experience on autism management had 3.8 folds increase the knowledge than non-experienced and participants having favorable attitude has 3.3 times knowledgeable than unfavorable attitude. No study was identified to compare with this study

finding in the literature. These findings show that a more frequent and standard emphasis should be placed on ASD in basic medical education and pediatric training and physicians should be reminded of the diagnostic criteria in the content of training or meetings related to ASD. And also pediatric residents should attach psychiatric unit in their yearly rotation which can increase their exposure and experience towards ASD.

On the other hand, the study participant with “favorable” attitude was 59%. This finding was higher than the study done by done in Buthan (31). This difference was may be due to profession difference that may lead to knowledge difference and knowledge had an impact on personnel attitude, in which the literature was done in nurse participants.

Twenty nine percent of the participants agree on the idea of children autism disorder may lead to intellectual disability and 29.7% strongly agree on the idea that Autism is under-recognized and often missed in general practice. There is no contemporary finding to measure the score level of this finding. But the fact is that, autism especially in this country is under recognized, missed from treatment and management and also had missed practice. These low rates show that a structured, hand-on “child psychiatry” training should be a must in pediatric residency training as well as the undergraduate curriculum to ensure early diagnosis and early intervention for optimal outcome

Early behavioral interventions can lead to better symptom improvement as well as improved overall long-term outcomes in children with ASD (9). In the current study, most of the participants (46.5%) were aware of the positive effect of early intervention on prognosis and 26.8 % of the participants were not aware of it, so they might not be able to guide families in this regard. Almost 35% of pediatric residents thought that children with ASD could receive formal training with typically developed peers and one third of pediatric resident does not know the presence of autism center in Addis Ababa and never link those children in need to treatment center. This finding supports that they were not aware of the need for special education for children with autism and they may be less likely to advocate for these much-needed services. Arranging seminars, visit and hand-on practice at special education centers to emphasize the importance of special education for the prognosis of these children as a part of the pediatric residency education program will be helpful.

Lastly, the overall participant with “good” practice on ASD were 51% and 34.8% of them agree on the idea of autism can occur in mild as well as extreme form, 29% agree on the idea of Most children with autism are also intellectually disabled and 29.7% strongly agree on the idea that Autism is under-recognized and often missed in general practice. And the determinant of participants practice was the gender of the participant and participant who saw autistic child during working as GP or resident before had increase the result of practice by 4.6 folds than those who never saw autistic child in their practice year before. No related study was identified which is comparable in the literature.

Several limitations exist with the design of the current study and must be considered when interpreting and placing value on the results obtained. The largest limitation was the sample size. Although several efforts were made to increase the sample size by visits to all teaching hospitals in Addis Ababa. The resulting number of participants was still somewhat low. It is possible that the results do not reflect the perspectives of the pediatrics resident as a whole county.

The other limitation was absence of plenty of prestigious literatures on the assessment of knowledge, attitude and practice in pediatric residents or pediatricians on ASD, which introduce weakness for comparison.

Another limitation of our study is that we did not compare the findings of the residents undergoing in each teaching hospitals with each other. Because each teaching hospitals have their own different curriculum, that may affect the knowledge, attitude as well as the practice of the residents towards ASD.

Furthermore, as a limitation we did not ask the misconceptions about autism which could be needed to be corrected in forthcoming trainings of the residents. The personal characteristics as far as experience of the participants with autism is concerned are also the limitation of this manuscript.

Pediatrics and child health residency rotations covering autism or special lectures, conferences and courses on autism are recommended to be integrated in the residents' training schedule for the early diagnosis and treatment of autism and to overcome misconceptions, prejudice against autism in the community.

7. Conclusion

The current study revealed that knowledge of pediatric residents about ASD was good, around 70% of the participants are knowledgeable and half of them has favorable attitude and good practice. As a first liner, pediatric resident should score more than this. The score of knowledge assessment part, attitude assessment part and practice assessment part is not comparable. Although pediatric residents knew more about the diagnostic criteria of ASD, their attitude toward ASD and their approach and practice regarding ASD were not that much satisfactory. So more emphasis on practical education about ASD is needed to improve knowledge, attitude and practice of pediatric residents regarding ASD to promote appropriate care, intervention and counseling.

8. Limitation of the study

The method cross sectional had one limitation. Because it doesn't see the cause and effect of the variable. Even though we include all teaching hospitals in Addis Ababa, the sample size is yet small which may affect the power of the study. The other limitation the practice-based assessment method. In our research we did not use direct observation in practice assessments of the resident, which may help to avoid miss interpretation of the questions. Another limitation of our study is that we did not compare the findings of the residents undergoing in each teaching hospitals with each other. Because each teaching hospitals have their own different curriculum, that may affect the knowledge, attitude as well as the practice of the residents towards ASD.

9. Recommendation

1. For the residents: - It is important for residents to improve the KAP regarding to ASD as they are future cornerstone for the management of these cases:
2. For the department: this research may be used as a clue and better to develop protocol of standard autism assessment to increase the level of KAP on medical studies on ASD,
3. For the researcher: - suggest to study in all health professionals those involved in ASD management

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Annex I: Participant Information Sheet

Questionnaire Code Number _____

My name is _____. I am working as data collector in the research Conducted by Dr. Selamawit Hizkiel who is conducting this research for the partial fulfillment of her specialty in pediatrics and child health in AAU. We are trying to assess Knowledge, attitude and practice of pediatrics resident on autism spectrum disorder at TASH, SPMMC and Yekatit 12 hospital. You will participate if you give me consent after you have understood the following information sheet

Purpose: The purpose of this study is to assess Pediatric residents' knowledge, attitude and practice on autism spectrum disorder

Procedure: To assess the Knowledge, attitude and practice of pediatrics resident on autism spectrum disorder at TASH, SPMMC and Yekatit 12 hospital. If you are willing to participate in this project, you need to understand and say “yes” on the agreement form.

Risk/ Discomfort: By participating in this research project, you may feel that it has some discomfort especially on spending time about 30 minutes. We hope you will participate in the study for the sake of the Benefit of the research result. I am Shure there is no risk in participating in this research project.

Benefits there may not be direct benefit to you but your Participation is likely to help us in assessment of Knowledge, attitude and practice of pediatrics resident on autism spectrum disorder at TASH, SPMMC and Yekatit 12 hospital ultimately.

Confidentiality: The information collect from this research project will be kept confidential and information about you that will be collected by this study will be stored in a file, without your name, but a code number assigned to it. In addition, it will not be revealed to anyone except the principal investigator and will be kept locked with key.

Right to refuse or withdraw: You have full right to refuse from participating in this research. You can choose not to respond to some or all questions if you do not want to give your response. If you have additional questions about the study, please contact the principal investigator

Dr. Selamawit Hizkiel principal investigator Tel: +251-912-43-57-80

Annex II: Consent Form

I understand all conditions stated above. I have understood that Participation in this study is entirely voluntarily. I have been told that my answers to the questions will not be given to anyone else and no reports of this study ever identify me in any way Therefore, I am Ready and willing to participate in this study

If respondent does not agree to be interviewed thanks them and go to the next respondent

If respondent say YES continue

Checked by:

Supervisor Name _____ signature _____

Date ____ / ____ / ____ E.C.

Time Interview Started: Hour: ____ Minute: ____

Questionnaire No _____

Time Interview Ended: Hour: ____ Minute: ____

Date ____ / ____ / ____ E.C. signature _____

Questionnaire

Part I – socio-demographic questions

Choose the correct answer by circling the corresponding letter	Response
1. Gender	male ☐ female ☐
2. Age	A) below 25 years B) 25-30 years C) 31-35 years D) above 35 years
3. Religion	A) Orthodox B.) Muslim C) Protestant D) Others
4. Marital status	A) Single B) Married C) Widow D) Divorced
5. Do you have children	A) Yes B) No
6. Year of residency	A) first year B) second year C) third year
7. Have you had any form of formal teaching, learning or training session on autism spectrum disorders?	A) Yes B) No
8. If your answer for question No.7 is yes, for how long?	A) < 1 hour B) 1-2 hours C) 2-3 hours D) > 3 hours
9. Have you experience gotten autistic child during work as GP or resident?	A) Yes B) No

Part II Knowledge related questions about childhood autism spectrum disorder

Choose the correct answer by circling the corresponding letter	Response
1. Does autism result in marked impairment in the use of multiple non-verbal behaviors such as eye to eye contact, facial expression, body postures and gestures during social interaction?	A. Yes B. No C. Don't know
2. Does autism cause Failure to develop peer relationship appropriate for developmental age?	A. Yes B. No C. Don't know
3. Does child with autism have Lack of spontaneous will to share enjoyment, interest or activities with other people?	A. Yes B. No C. Don't know
4. Does autism child have Lack of social or emotional reciprocity?	A. Yes B. No C. Don't know
5. Does autism child stare into open space and not focusing on anything specific?	A. Yes B. No C. Don't know
6. Does autistic child can appear as if deaf or dumb?	A. Yes B. No C. Don't know
7. Does child with autism has Loss of interest in the environment and surroundings?	A. Yes B. No C. Don't know
8. Does Social smile is usually absent in a child with Autism?	A. Yes B. No C. Don't know
9. Does autistic child has Delay or total lack of development of spoken language	A. Yes B. No C. Don't know
10. Does autistic child has stereotyped and repetitive movement (e.g. Hand or finger flapping or twisting)?	A. Yes B. No C. Don't know
11. Does autism associated with abnormal eating habit?	A. Yes B. No C. Don't know
12. Does Autistic child persistently preoccupied with parts of objects?	A. Yes B. No C. Don't know
13. Does Autistic child Love for regimented routine activities?	A. Yes B. No C. Don't know
14. Does Autism is Childhood Schizophrenia?	A. Yes B. No C. Don't know
15. Does Autism is an auto-immune condition?	A. Yes B. No C. Don't know
16. Autism is a neuro-developmental disorder?	A. Yes B. No C. Don't know
17. Autism could be associated with intellectual disability?	A. Yes B. No C. Don't know
18. Does Autism could be associated with Epilepsy?	A. Yes B. No C. Don't know
19. At what age the Onset of Autism start?	A. Neonatal age B. Infancy C. childhood
20. Does autism is curable disease?	A. Yes B. No C. Don't know

Part III Attitude Based Questions

How Do You Agree/Disagree with the Following Statements?

1. Do you believe that autism can occur in mild as well as extreme form?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
2. Do you believe that Children with autism usually grow up to be schizophrenic adults?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
3. Do you believe that Autism is an emotional disorder?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
4. Do you think that most children with autism are also mentally retarded?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
5. Do you think that Autism is more common among higher socio-economic society?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
6. Do you think that Autism is a rare condition in Ethiopia as compared to the Western country?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
7. Do you believe that Autism is under-recognized and often missed in general practice?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
8. Do you think that there is a lack of awareness regarding autism among professionals in Ethiopia?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
9. Do you think that Autism is a communication disorder?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
10. Do you think that Children with autism do not show social attachments, even to parents?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
11. Do you believe that Autism exists only in childhood?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
12. Do you believe that with early intervention, the prognosis of individuals with autism is poor?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
13. Do you agree that Parental counseling on training techniques is one of effective treatment of autism?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree
14. Do you believe that Dietary intervention is one of the treatment options?	A. Strongly Disagree B. Disagree C. I am not sure D. Agree E. Strongly agree

Part IV: Practice Based Questionnaire

1. Did you encounter child with autism spectrum disorders before?	A) Yes B) No
2. Which diagnostic parameter of ASD do you need?	A. Deficits in social communication and interaction B. Restricted, repetitive and stereotyped patterns of behavior C. Symptoms present in early childhood D. Symptoms cause clinically significant impairment in functioning E. Symptoms can't be better explained by intellectual disability (ID) F. All
3. Have you ever used DSM-V diagnostic criteria?	A. Yes B. No
4. Do you apply observation in the diagnosis process	A. Yes B. No
5. Did you understand the autism children about limited use of non-verbal behaviors such as eye gaze and body posture to regulate social interaction	A. Yes B. No
6. Did you understand the speech of the autism children on difficulties in picking up on non-verbal or emotional cues	A. Yes B. No
7. Did you understand the problems understanding spoken language/verbal instructions	A. Yes B. No
9. Did you ever advice Instructional methods for family about to the range of ages, abilities, and learning styles to follow a child with autism	A. Yes B. No
10. Are you advice Parents and family members are supported as active participants in all aspects of their child's ongoing mental health issue	A. Yes B. No
11. Are you aware of the presence of center for autism in Addis Ababa?	A. Yes B. No
12. Did you link a child with autism to psychiatric unit, speech therapy before?	A. Yes B. No
13. Did you prescribe anticonvulsant, mood stabilizer, antipsychotic and stimulant medications before?	A. Yes B. No
14. Did you attend any training on autism spectrum disorders?	A. Yes B. No
15. Are you satisfied with your knowledge about autism?	A. Yes B. No
16. Do you wish to improve your knowledge about autism?	A. Yes B. No

