



Individuals with Autism Spectrum Disorders and Developmental Disorders in Oman: An Overview of Current Status

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Abstract

This paper offers an overview of the current status of individuals with autism spectrum disorders (ASD) and developmental disorders (DD) in Oman. A review of demographic and background information about Oman is first presented, followed by an overview of the current status of individuals with autism and developmental disorders, in terms of disability-related legislation, prevalence and diagnosis, as well as treatment and education. In the last section of the paper, major challenges faced in the field are addressed, including lack of autism awareness, lack of healthcare and educational programs or related services, lack of highly qualified professionals to implement evidence-based practices, issues regarding early identification and early intervention, as well as issues pertaining secondary transition, independent living and employment. Corresponding recommendation is proposed at the end of each challenge.

Keywords Autism · Disability-related legislation · Autism prevalence · Treatments · Education · Challenges

Introduction

Demographic Information

Oman is located at the south-eastern edge of the Arabian Peninsula, with a total land area of 309,500 km² and shared borders with Saudi Arabia, the United Arab Emirates, and Yemen. It faces the Arabian Gulf, the Gulf of Oman and the Arabian Sea. Oman is the doorway between the Indian Ocean, East Africa, and the Arabian Gulf, Oman's location has always been strategically important (UNESCO 2004). According to The World Bank (2017), the total population of Oman in 2017 was 4,636,262. Islam is the official religion of Oman (World Health Organization 2006).

Background about Oman and Its Special Education

Oman is considered a developing country. Since 1971, it has witnessed rapid development and expansion of its

educational system. The school enrollment rates have increased from 900 in 1970 to over 600,000 in 2008/2009, representing about 70% of the total population then. However, Oman does not have a formal mechanism for disability identification in children, which prevents children with special needs from access to a free and appropriate public education. Unfortunately, little research has been done in this field. To fill the gap in the existing literature, this paper aims to provide an overview of the status of individuals with autism spectrum disorders (ASD) in Oman.

The number of individuals diagnosed with ASDs has increased dramatically in the past two decades globally. In the United States, according to the Centers for Disease Control and Prevention (CDC 2018), 1 in 59 children under the age of eight have an ASD diagnosis. The fast-growing prevalence also occurs in developing countries such as Oman, who is not ready to take on this challenge yet (Al-Farsi et al. 2017). Efforts that are common in many other countries aiming to make positive changes to the life of individuals with disabilities and their families, such as national initiatives, governmental movements, and activities lead by grass-rooted organizations, are not common in Oman (Al-Farsi et al. 2011). The development of Special Education and related services for individuals with autism has lagged behind development in other areas/domains in the country (Al-Farsi et al. 2011).

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In Oman, the erstwhile Ministry of National Economy led collective efforts to create database on individuals with disabilities among the Omani's communities by administering three consecutive population censuses (1993–2003–2010; Ministry of National Economy 2011). It was reported that there were 62,506 individuals with disabilities in 2010 according to the Census data, representing 3.2% of the total Omani population. Unfortunately, no updated official data are available after 2010, but it is estimated that the number has also dramatically increased ever since. However, it was unclear whether or not individuals with autism were actually included in this number because there are only six disability categories (as listed below; Omani Ministry of National Economy 2011), and autism was not clearly specified under any of these categories:

1. Vision impairments, including wearing glasses;
2. hearing impairments, including wearing hearing aids;
3. physical disability;
4. memory and attention deficits;
5. cognitive impairments (or intellectual disabilities), including inability to take care of self;
6. communication disorders (speech and/or language impairments).

Prevalence and Diagnosis

Although autism has been widely known in Western countries for decades, this developmental disability is still novel for most people in Oman. Thus, there is very limited information on autism in governmental and/or scholarly publications. By far, no official statistics have ever been released by Omani government regarding the prevalence of autism since no national systematic epidemiological studies have ever been conducted in the country. In 2011, Al-Farsi et al. (2011) conducted a cross-sectional descriptive study from June to December 2009 to investigate this issue and it is the first, yet the only study of its kind in the existing literature. The study targeted children who had been formally diagnosed with an ASD from birth to 14 years old. The children's clinical information/data were collected by hospitals and related institutions across the whole country. They found that the prevalence of autism was estimated to be 1.4 per 10,000, or 1 in 7143, in children and youths under the age of 15. However, researchers believed that this number was substantially smaller than the actual situation since many individuals affected by this disorder were not identified and/or diagnosed officially (Al-Farsi et al. 2011).

Making an accurate ASD diagnosis is a difficult task in Oman. Currently, the diagnosis can be only made by psychiatrists at the Child Psychiatry Unit at Sultan Qaboos University Tertiary Hospital, a medical center located in Muscat, the capital city of Oman. A research team from neighboring

countries (e.g., Saudi Arabia and Kuwait) have standardized and validated the Arabic version of the Childhood Autism Rating Scale (CARS, Al-Shomari and Al-Saratwai 2002), which has been used in Oman by said hospital (Al-Farsi et al. 2011) as the main protocol to make ASD diagnosis, and it takes only 5–10 min to administer (Schopler and Van Bourgondien 2010). Although there has been an Arabic version of the second edition of CARS that has been used in some Arabic countries such as in Lebanon (e.g., the second edition of both the Lebanese version of the Childhood Autism Rating Scale-High Functioning Version [CARS2-HF] and the Lebanese version of the Childhood Autism Rating Scale-Standard Version [CARS2-ST]) (Akoury-Dirani et al. 2013a, b), yet in Oman, the older version of CARS is still currently being used (Al-Farsi et al. 2011).

In addition to the CARS, Seif Eldin et al. (2008) validated the Arabic version of the Modified Checklist for Autism in Toddlers (M-CHAT) in nine Arab countries including Oman. The M-CHAT can be used reliably as a screening instrument in toddlers between 16 and 30 months of age to assess the risk of ASD (Robins et al. 1999). Oman has only a very small number of medical doctors who are specialized in Psychiatry, rated at 14.2 per 100,000 persons (or 1 in 7042 persons, Al-Adawi 2017; World Health Organization & Ministry of Health Sultanate of Oman 2008). Among them, only a few receive formal training on ASD and are competent in making an official ASD diagnosis. They are the psychiatrists working at the Child Psychiatry Unit at Sultan Qaboos University Tertiary Hospital located in Muscat, which is the only hospital that serves children with ASD across the entire country.

The diagnosis process usually goes as follows. First parents will go to a local hospital to see a regular primary care doctor or pediatrician when they sense something is not right with their child's development. The doctor will interview them about their child's developmental history and symptoms of concern. Unfortunately, most doctors at this level fail to recognize the signs or symptoms of ASD. If a red flag is raised but the doctor cannot figure out why, the parents are usually referred to a mental health professional, most likely a licensed psychiatrist that works at the Child Psychiatry Unit of Sultan Qaboos Tertiary Hospital, where autism-specific screening and/or diagnostic instruments (i.e., M-CHAT and CARS, as mentioned previously) will be used to make an official diagnosis. Noted autism is usually considered as a mental disorder, not a disability category in Oman (Al-Sharbati et al. 2016), or often is messed up with other developmental conditions, such as intellectual disabilities (Huang et al. 2013; Ouhtit et al. 2015). An accurate diagnosis of ASD in Oman usually relies on the doctors' competency and expertise in ASD-specific assessments and diagnosis.

Unlike practices in Western countries, systematic observation of the child in multiple settings (e.g., school,

home, and community) is not commonly conducted in Oman, nor does the involvement of a multidisciplinary team in the diagnosis process. The entire diagnosis process for each child usually takes only 20 to 30 min. Depending on the healthcare professionals' individual competence and credentials, not all ASD diagnoses go through the same process reported above. As mentioned earlier, the Sultan Qaboos Tertiary Hospital is the only place that makes an ASD diagnosis in Oman (Ouhtit et al. 2015), so its database is the only source of official information regarding children with an ASD diagnosis in this country. Therefore, Oman does not have a formal mechanism for disability diagnosis that healthcare professionals can follow. Thus, making an accurate ASD diagnosis in children is not an easy task in Oman.

Disability-Related Legislation

On April 22nd, 2008, Oman issued the first legislation related to individuals with disabilities—Persons with Disabilities Welfare and Rehabilitation Act—which is also referred to as Royal Decree No. 63/2008 (“the Law” hereafter). Later that year, Oman ratified UN’s Convention on the Rights of Persons with Disabilities (UNCRPD) through another law, Royal Decree No. 121/2008 (issued on November 5th, 2008) (Emam 2016). The UNCRPD called for removing all restrictions on education of individuals with disabilities and providing early intervention services to young children with disabilities in an inclusive setting (Emam 2016). Under the Laws, the Ministry of Social Development is responsible for advocating on behalf of persons with disabilities and for protecting the basic civil and human rights of persons with disabilities. Although children with ASD or DD were not explicitly excluded in the above legislation, neither were they mentioned directly.

Oman Ministry of Education in Oman also announced its commitment to ensure that “all children must have access to education, regardless of their gender, social status, cultural group or area of residence” (Ministry of Education and World Bank 2012, p. 33). However, this commitment statement failed to recognize disabilities as one of the factors that limit equal access to education. Although free public education is offered to all citizens up to the end of high school (Ministry of Education and World Bank 2012), most public schools in Oman remain inadequately prepared to provide students affected by disabilities including ASD with appropriate educational and other related services [i.e. including ASD (Emam 2016)]. The following section will report the current status of treatments and educational services available for children with ASD in Oman.

Treatments and Education

Rehabilitation Treatments

In general, current treatment options and education services for individuals with disabilities including ASD are very limited or under-developed in Oman (Ouhtit et al. 2015). Technically, ASD treatments in Oman are still primarily based on the medical model. Current treatments mainly include medication, physical therapies and occupational therapies. According to the Ministry of Social Development (2016a), there are 23 State-owned rehabilitation centers, located in different regions across the country. These centers called Al-Wafa Rehabilitation Centers for Children with Disabilities, which are voluntary service centers. They are operated in accordance with the provisions of Ministerial Decision No (60/2012) issued in 2012 (Ministry of Social Development 2016a). The main purpose of these centers is to offer services to individuals with all types of disabilities between 2 to 30 years old with official medical documents that prove the diagnoses. These centers are open five days per week, services are offered during daytime; therefore, these individuals can go home every day. Individuals enrolled in these centers may have various disabilities and mental disorders, including but are not limited to intellectual disabilities, hearing impairments, physical disabilities, and ASD (Oman Ministry of Social Development 2016a). Services offered in these centers include early intervention, physical therapy, occupational therapy, special education, speech and language therapy, mental health counseling to individuals with disabilities, family counseling, vocational preparation, life skill training and self-management, as well as integration of children with disabilities in the communities. All services are free to children with various health conditions and their families, including ASD and DD (Ministry of Social Development 2016a).

In addition to the Al-Wafa Rehabilitation Centers for Children, the Ministry of Social Development established additional three institutes in the capital city to serve people with disabilities (Omani citizens or residents) at no cost to parents. People with disabilities attending these institutes come from different regions across the country in Oman. These centers open five days per week and services are offered during daytime; therefore, attending individuals who live in the capital can go home every day. They also have residential facilities for families and patients originally came from other regions outside Muscat.

One of these institutes is the Care and Rehabilitation Centre for Disabilities, which serves individuals with disabilities aged 14 to 24. Although no specific information is available regarding the types of disabilities that are served by this center, individuals with ASD and developmental disorders should be eligible and included. The center provides

them with comprehensive care including accommodation, food, treatment, and recreation as well as monthly financial assistance (equivalent to 39 US dollars per student). Furthermore, the institute offers educational services, rehabilitation program and vocational training in various professions and specializations such as sewing, blacksmithing, painting, embellishment and decoration (Ministry of Social Development 2016a).

Another institute is named *Association of Early Intervention for Children with Disabilities*. It offers services to all young children with disabilities except visual impairments. This institute provides diagnostic, training and educational services for children with disabilities from birth to six-year old (Ministry of Social Development 2015).

The last institute's name is the *Al-Aman Rehabilitation Centre*, which serves individuals with physical, intellectual and multiple disabilities aged 15 and above. However, to enroll in this center, individuals with disabilities should not have any infectious diseases and/or psychotic disorders. Services and programs are offered during daytime. There is also a residence facility for individuals who are living outside Muscat. Services provided by the center include: (1) rehabilitation services that include physiotherapy, daily functioning skill training, speech/language pathology, special education, behavior modification, and selfcare skills training; (2) social and psychological services, such as offering social and psychological counseling to individuals with disabilities and their families; (3) medical services, including health-care follow-up for sick child in coordination with health and governmental institutions (4) daily supervised transportation services to children living in Muscat (Ministry of Social Development 2016a).

All aforementioned centers are run and supervised by Oman's Ministry of Social Development. Though the capacity of these rehabilitation centers or the number of children enrolled in such centers are not specified, accepting children with disabilities to these centers mainly depends on the availability of space (Ministry of Social Development 2016a). In addition to these rehabilitation institutes, Oman also offers free public education to individuals with ASD or DD. The following session describes services provided by the schools.

Education

In the United States, all students with disabilities, no matter what types of disabilities they have and how severe their disabilities are, are entitled to attend schools and receive appropriate public educational services at no cost to parents (Heward et al. 2017). However, in Oman, a child with the same label is most likely to be rejected by regular public schools because special education services are only available in special schools, not in regular schools. Public schools are

not mandated by law, to accept children with disabilities, including children with ASD. Consequentially, education of children with ASD has become a major concern in the field. Most children affected by the spectrum are deprived of free and appropriate educational services in public school settings.

According to data from the 2003 census, 75% of people with disabilities were uneducated (Ministry of National Economy 2010). In Oman, special education is the task of the Ministry of Education and the Ministry of Social Development, with some additional responsibility (e.g., for assessment purposes) placed on the Ministry of Health (Alfawair and Al Tobi 2015). Some public educational and training organizations have been established to offer special education services to individuals with disabilities including ASD since early 2000. They include the Disabled Care and Rehabilitation Center, Care Home for Disabled Children in Muscat, and Wafaa Social Centers (23 centers distributed across districts in the capital city and across the country), as mentioned previously. Additionally, some private rehabilitation centers were developed to serve individuals with disabilities under the supervision of the Ministry of Social Development, which include the Muscat Center for Autism, the Creative Center for Rehabilitation, and the Association of Early Intervention for Children with Special Needs (Omanuna 2018).

Please note that in Oman only three public schools affiliated to the Ministry of Education offer specialized programs for students with hearing, intellectual or visual impairments. All are located in Muscat (Ministry of Education 2011). In addition, the Ministry runs a Special Education program for students with learning disabilities that is called the Learning Difficulties Remediation Program (Ministry of Education and World Bank 2012). Students with learning disabilities receive specialized instruction and academic assistance in resource room there. Unlike other programs, this is the only Special Education program that is housed in public elementary schools (Ministry of Education and World Bank 2012).

Students with Disabilities Attending Public Schools

In Oman, unlike many Western countries, there are no Special Education programs embedded in general education settings in public schools (except the Learning Difficulties Remediation Program). Interestingly, some integration programs are currently being creating implemented in Oman. However, only students with hearing impairments and intellectual disabilities are included in this system (Alfawair and Al Tobi 2015). Although children with these disabilities attend public schools, they are often taught in a separate classroom, where two special education teachers are responsible for teaching all subject areas. The Ministry of Education initiated such program to integrate students with

disabilities into regular schools since academic year of 2005 to 2006 (Ministry of Education and World Bank 2012). It is important to note that many children with ASD also have intellectual disabilities, and it is common that children with ASD might be misdiagnosed as having intellectual disabilities. Thus, some children with ASD are actually included in this type of integrative programs. According to the latest statistics, there are 127 schools that offer this type of integration programs, serving a total of 5246 students with hearing impairments and intellectual disabilities (United Nations Human rights 2016). Noted services offered to these students are limited to basic academic skills and speech-language pathology. Students enrolled in these integration programs cannot have multiple disabilities (for example, either intellectual disability or hearing disability but not a combination of two or more disabilities (Oman Department of Special Education 2010).

In these programs scattered across the whole country, children with disabilities have little or no contacts with their typically developing peers, although they attend the same school, they are placed in segregated classrooms and have no access to the general education curriculum. These programs usually use the same curriculum that are used by special schools for students with intellectual disabilities or hearing impairment located in Muscat (Oman Department of Special Education 2010). Neither do they have physical education, art and music classes or recess with typical developing peers. Students with disabilities usually attend classes that are located at a distance from the rest of the students in the same school (Alakhzami et al. 2013).

Overall, several circumstances could have contributed to the slow advancement of the education of children with ASD in Oman including, which include but not limit to the following:

1. Most general education teachers and school's administrators are unwilling to include children with ASD in their general ed classrooms/schools partly due to their lack of understanding and expertise in ASD/other disabilities and learning styles. In general, they hold negative attitudes towards inclusion of students with various disabilities including ASD (Alakhzami et al. 2013).
2. Also, children with ASD and many other disabilities usually exhibit some challenging behaviors in classrooms, which could distract the learning of their typically developing peers or interrupt teachers' teaching (Huang et al. 2013).
3. In addition, regular schools focus only on academics, they do not offer daily living skill training or social skill training to children with ASD.

In summary, there are inadequate appropriate special education services for students with disabilities, particularly

ASD and DD, in Oman (Ministry of Education and World Bank 2012).

Funding for Special Education

Although Oman government gives priority to fund special education services, it is still far from adequate. According to the data published by the erstwhile Ministry of Social Development (2016b), there are 34,900 people with disabilities registered as beneficiaries of persons with disabilities identification card system during 2016, of which males accounted for 65.2%. The Ministry of Social Development issues an identity card (ID card) to individuals diagnosed with any type of disability. This ID card is issued to ensure people with disabilities enjoy certain rights and privileges. Additionally, this ID card helps keep track on the numbers of people with disabilities, such as the prevalence of a disability and its geographical distribution. It also helps to establish plans to address their needs. The ID card for individuals with disabilities (including those with ASD and DD) also offers, in certain conditions, a subsidized income to those with family incomes below 350 Riyals per month (or equivalent to \$900 USD). It also entails exemption from certain government fees such as fees to issue work license, and to employ domestic workers and a private driver. People with disabilities who earn an income below 250 Riyals per month (or equivalent to \$649.39 USD), are qualified to be exempted from the registration fees and renewal of their car registration. The favorable treatment is also extended to grant people with disabilities certain exemption or discounts when buying some automobile supplies and household items. Among the privileges offered to people with disabilities are allocation of parking area, reservation of seating area in public transportation, and getting compensatory equipment or assistance device.

Challenges in the Field and Recommendation

Lack of Autism Awareness

In Oman, lack of autism awareness is common. For example, recently, Al-Farsi et al. (2017) conducted a study to examine autism awareness in 113 general practitioners coming from various healthcare organizations. Those professionals usually serve as the first level of contacts for parents seeking an official diagnosis of ASD and later on treatment/intervention for their children in Oman. The researchers found that a great proportion of these healthcare providers, regardless how many years of practice in the field, still believed that specific foods (3% of the participants sample), immunization (11% of the participants sample), and parental neglect (22% of the participants sample), as well as lack of religious belief (13% of the participants sample) could cause autism. Some

still hold the belief that autism is a disease that occurs only in the affluent population. The study also found that many healthcare professionals fail to recognize the signs or core symptoms displayed by children with ASD. For example, just 79% of the sample participants reported that people with autism have communication problems, and 23% stated that people with autism do not have repeated movements of hand and head. Approximately 47% had mistakenly assumed body language and symbolic communication as one of the signs and symptoms of autism, about 37% stated that people with autism do not have average intelligence, and 14% stated that autism causes the development of schizophrenia. Also, around 23% of the participant reported they did not know the age when autism is displayed and, therefore, they neglected to diagnose it accurately, and approximately 12% stated that autism is curable.

Similarly, many special educators know little about ASD. They receive few special training on ASD and most have little experience working with a real child with ASD before they begin their careers as special education teachers. Even with professional development opportunities, these teachers still feel unprepared to deliver effective instruction or behavioral management to address the academic and behavioral needs of students with ASD. Unfortunately, so far, no study has been conducted in Oman to investigate special education teachers' perceived knowledge on students with ASD. Special education teachers know little about ASD in Oman, not to mention general education teachers or the general public.

The Law (i.e., Article 11) in Oman required that the concerned parties shall be responsible for increasing disability awareness in both professionals and the general public through various media channels and press agencies (United Nations Human Rights 2016). Events such as International Disability Day, Deaf Awareness Week, and White Cane Day (for individuals with visually impairments) are playing an essentially important role in promoting disability awareness in the general public via various medias, including national newspapers, television channels and radio broadcasting.

Despite the continuous effort to raise disability (including ASD) awareness in Oman, most awareness campaigns held activities in one geographical area, most likely in the capital city Muscat. Even in Muscat, such event/campaign usually occurs only once or twice a year and mostly accessible to only relevant educators and parents. Thus, the lack of national experts in autism and the nature of information dissemination are considered as two major factors that prevent autism from being widely known by healthcare professionals and educators as well as the general public.

To further promote autism awareness nationally, greater efforts need to be made by all stakeholders, including policy makers, mass medias, healthcare professionals (particularly pediatric psychiatrists and child psychologists), and special educators, etc. For example, healthcare professionals should

have access to professional development opportunities in forms of workshops on various disabilities on a regular basis. Similarly, in-service training on ASD can be offered to special educators to learn more about the symptoms and characteristics of ASD, as well as corresponding instructional strategies or interventions. In addition, documentaries that focus on various disabilities (including ASD) can be filmed and played on TV regularly to educate the general public. Finally, when promoting ASD awareness, it is important to pay special attention to the abilities and capabilities of people with ASD, instead of solely focusing on their disabilities (Al-Balushi et al. 2011; Huang et al. 2013). More information about people with disabilities (including ASD) should be disseminated among educational professionals, religious leaders and media professionals (United Nations 2018). The government should offer financial assistance to support these efforts (Alfawair and Al Tobi 2015).

Lack of Healthcare and Educational Programs or Related Services

As mentioned earlier, currently there is only one child and adolescent mental health service unit in Oman and it is located in the capital city—Muscat. There are no any other professionals (such as school psychologist in the United States) that can make an official diagnosis for individuals with disabilities including ASD except psychiatrists (Ouhit et al. 2015). Also, in Oman, the diagnosis process does not usually involve a multidisciplinary team approach, thus psychiatrists are the only healthcare professionals who take care of the behavioral and mental health needs of the individuals with ASD (Al-Farsi et al. 2011). With only one service unit serving the whole country, there are definitely not enough in this field.

In school settings, special education services for children and youth with disabilities, including those with ASD, have been lagging behind other developments in Oman. Most special education services are so basic, they are unable to meet the individual needs of those students. As mentioned earlier, most special education schools/units are affiliated with hospitals and located in only the capital city, many families living outside the capital city have difficulty accessing special education services and supports for their children. Caregivers from high-income families were more likely to have access to services offered by educational psychologists, occupational therapists, speech therapists and special education teachers in Oman, or more likely to seek treatment in private clinics or abroad (for example, Egypt or Jordan, average cost equivalent to \$8780 USD a year); on the other hand, caregivers from low income families were more likely to seek treatment services from psychiatric clinics in Oman only (Al-Farsi et al. 2011). The lack of funding for special education services is considered a critical challenge for the

delivery of such services in Oman (Alfawair and Al Tobi 2015). Lack of funding limits the use of assistive technologies and other technology-based interventions for individuals with disabilities including ASD and DD (Alfawair and Al Tobi 2015). In summary, funding constraints have prevented individuals with ASD from receiving adequate rehabilitation or educational supports and related services they need.

Although Oman has been making great efforts to address the challenges mentioned previously, such efforts are still insufficient. Problems such as inadequate school buildings/facilities and classrooms, lack of public transportation provision and highly qualified staff members are prevailing (Alfawair and Al Tobi 2015). Oman should commit more financial supports or funding opportunities to assist special schools or organizations expanding current programs and improving their quality. More rehabilitation centers or special schools should be built and funded across different regions of the country. More healthcare professionals and special educators are encouraged to join the field to serve individuals with ASD. Other professionals in related field such as speech and language pathologists and occupational therapists should be encouraged and rewarded when serving individuals with ASD.

Lack of Highly Qualified Professionals to Implement Evidence-Based Practices

Oman is in urgent need of highly qualified educators and related professionals (including special education and general education teachers and other related professionals such as speech pathologist, behavioral analyst, occupational therapist, etc.) (Al-Balushi et al. 2011). Certain efforts are being made to address this challenge. However, currently, there are only two universities in Oman that are offering teacher training in the field of Special Education: Sultan Qaboos University and University of Nizwa. Sultan Qaboos University offers two levels of programs in Special Education—a one-year postgraduate diploma program in Learning Disabilities and a master's degree in Learning Disabilities (Sultan Qaboos University 2014). The University of Nizwa offers a variety of programs in Special Education, including diploma of Special Education and a bachelor's degree in Special Education with a focus in one of the following areas: Learning Disabilities, Intellectual Disabilities, Visual Impairment, Hearing Impairment, and Giftedness (Alfawair and Al Tobi 2015). There is no teacher training program that is specifically focused on ASD and DD. The above pre-service teacher education programs were created only recently. In addition, there are very limited in-service professional development opportunities for Special Education teachers (Alfawair and Al Tobi 2015). Thus, there are very few Special Education teachers who are considered highly

qualified professionals that are competent in serving students with ASD and DD.

Although previous research in the past four decades has proven that Applied Behavior Analysis (ABA) is effective in reducing challenging behaviors displayed by students with ASD (Kearney 2008; Volkmar et al. 2014), using ABA techniques to treat children with ASD, however, is not yet a common practice in Oman mainly due to lack of ASD-related pre-service training or in-service professional development opportunities at work as mentioned above. Consequentially, professionals do not have the competence to implement evidence-based practices including behavioral interventions for children with ASD and DD in Oman. Instead, many professionals still heavily employ treatments that have not yet been proven scientific or effective, including but not limited to hyperbaric oxygen therapy, gluten free-casein free diet, vitamin supplements, raw camel milk, and therapeutic horseback riding, etc. It is highly recommended that professionals and educators serving students with ASD and DD in Oman should be offered systematic training on evidence-based practices for individuals with ASD and on how to implement them. In addition, Oman should establish new or reform current teacher education programs at various levels (diploma, bachelor, master, and Ph.D.) in public and private universities to better meet the needs of individuals with disabilities (Alfawair and Al Tobi 2015).

Issues Regarding Early Identification and Early Intervention

Due to the lack of ASD awareness in parents and lack of experts/professionals on ASD, many children with ASD in Oman have missed the best time for early intervention when they received an official diagnosis. Thus, early identification becomes essentially important. Oman also needs to establish a better mechanism for early identification and diagnosis of disabilities, including ASD and DD. As mentioned earlier, the evaluation process should involve the use of a multidisciplinary team and a variety of assessment protocols, to get an accurate understanding of the whole person, including the child's strengths and needs, personal preferences, as well as ability and capability (Heward et al. 2017).

Early intervention is equally important as early identification. Early intense behavioral intervention (EIBI) has been proven the most cost-effective evidence-based practice for children with ASD (Hooper and Umansky 2014). Previous research has proven that EIBI can help children with ASD remedy some core deficits (Hooper and Umansky 2014), so it is highly recommended that children in Oman should be provided with evidence-based interventions such as EIBI as soon as they are officially diagnosed. This will help optimize child development and positive prognosis (Zwaigenbaum et al. 2015).

Issues Pertaining Secondary Transition, Independent Living and Employment

Transition supports and services play an important role in helping students with disabilities become more independent young adults. However, Oman does not have such programs for transition-age students with ASD at secondary education settings, although the Ministry of Education offers so called career development training to special education teachers working in public special schools and integration educational settings. Lack of transition supports and services result in low employment rate in individuals with disabilities. According to the 2003 census, only 15.7% of all people with disabilities in Oman have jobs and live independently; approximately 65% have never worked in their life time. Most people with disabilities who are unemployed or have not received any vocational rehabilitation services stay home with their families. There is no governmental group homes for people with disabilities in Oman, most likely due to either lack of well trained personnel and/or lack of funding in this area (World Health Organization and Ministry of Health Sultanate of Oman 2008). Individuals with disabilities often have jobs related to sewing, blacksmithing, painting, embellishment, and decoration in Oman (Ministry of Social Development 2016a). Although the Ministry of Manpower (2003) mandates (Article 17 of the Labor Law) that business entities that employ 50 or more persons should hire persons with disabilities, who should enjoy the same rights as their co-workers without disabilities. However, the Ministry of Manpower (responsible for regulating employment of people with and without disabilities) rarely evaluates or monitors whether the entities are compliant with the law. The majority if not all business entities ignore this mandate. Thus, establishing transition programs at secondary level in Oman is highly recommended since this will help students with disabilities become more independent in adulthood and more competitive in job market.

Conclusion

For the past decade, Oman has made some positive progress in the field of Special Education in terms of legislation and policy making as well as program development. However, Oman still needs to continue working hard to address prevailing challenges and issues such as lack of autism awareness, lack of healthcare and educational programs or related services, lack of highly qualified professionals to implement evidence-based practices, issues regarding early identification and early intervention, and issues pertaining secondary transition, independent living and employment. Providing every individual with ASD with an individualized, free and appropriate public education is the goal that Oman aims

at achieving for the next decade or two. Collective efforts between policy makers, healthcare providers, educational systems and communities need to be made to create a truly inclusive environment where students with ASD enjoy the same rights, have access to the same curriculum, and are included in all aspects of the society.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Research Involving Human Participants and/or Animals This article does not contain any studies with human participants performed by any of the authors.

Informed Consent This article does not contain any studies with human participants; therefore, informed consent was not obtained in this study.

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