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High-functioning individuals with autism spectrum disorders in Middle Eastern societies

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Autism spectrum disorders (ASD) are a constellation of severe neurodevelopmental disorders which generally present with serious impairments in social interaction and verbal and nonverbal communication skills [1]. According to the latest CDC reports, ASD inflicts one in 59 persons, approximately 80% being male. Over 75% of the affected individuals suffer from serious intelligence impediments. These disorders can enormously impact the patient's social interactions, potentially degrading them to become tremendous burdens on society [2–4]. Nonetheless, many autistic patients have an IQ greater than 70. They are categorized as high-functioning autism (HFA), and individuals with average or superior intellectual capacities with no developmental deficiencies are traditionally classified as Asperger's syndrome. This group of patients with autism should not be considered disabled in a society where they can participate in setting its values.

It is demonstrated that environmental, immunological, and genetic factors are influential in the development of autism spectrum disorders [5]. Several studies with MRI imaging have demonstrated slight variations in different brain areas such as the right fusiform gyrus, right temporal-occipital lobe, left parietal lobe, left middle temporal gyrus, and superior temporal gyrus in patients with ASD [6]. Moreover, differences in the subcortical area, such as the caudate nucleus and hippocampus enlargement, and shrinkage in the cerebellum and basal ganglia are observed in those affected [7]. Different structural and functional brain variations in HFA have also revealed slight differences in the frontal lobe anatomy of the brains of patients with Asperger's syndrome [8]. Therefore, strong evidence exists that people with Asperger's syndrome are anatomically different from those without this condition. This anatomic deviation from the general population and peculiar brain structure is not necessarily better or worse.

In genetic terms, there has been a significant deviation from a general concept of genetic risk to a constellation of heterogeneous, individual genetic variants which increase ASD risk [9]. It is demonstrated that although environmental factors play influential roles, in approximately 74–93% of people with ASD, the risk is genetic [10]. Genetic risk in ASD has a complex inheritance pattern; some variants slightly increase the risk, and rare ones have more significant effects. Still, none of them can be considered "genetic causes" of ASD [11]. In ASD, genetic variants merely increase the risk and cannot be considered causal mutations because they lead to the development of ASD only in a minority of children [12]. Therefore, the leading genetic cause of ASD is a compilation of several genetic variants, which can also be associated with other neurodevelopmental or psychiatric differences.

With the worldwide prevalence of autism of 1–2%, it would be feasible to assume that there are approximately 80 million individuals with autism worldwide, many of them having HFA [13]. Unfortunately, no evidence-based statistics exist on the prevalence of autism in the Middle East. However, in most low- to middle-income countries, no diagnostic or intervention system exists for people with autism and HFA [14]. Hitherto, most autism research is carried out in Western countries or those with an adapted Western culture [15]. Moreover,

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the subject of HFA can be a very cultural-sensitive issue, and people with this condition may be judged and treated differently in different societies. For instance, based on child-rearing cultures, tolerance of eccentric behavior, expectations of the society, and traditional camouflage practices, children, adolescents, and adults with the HFQ may find attitudes of their society as hostile, tolerant, or even appreciative and gratifying of their perceptional and behavioral deviation.

Children and adolescents with HFA have a peculiar perception of the world and interact distinctly with society. They are more interested in objects than people and communicate less, tend to follow their judgments and beliefs instead of respecting society, and have intense desires and pursuits. Moreover, they are accurate at attention to detail and are generally amazed by patterned concepts such as shapes, dates, systems, and names of animals or objects [16]. Therefore, it can be asserted that children with HFA are fascinated by a world of objects instead of people and society. This can be considered a disability in a world with extreme social values and expectations. But lack of social skills does not denote disability. There is strong evidence that people with HFA are superior to others in working with machines and mechanical instruments [17]. It is also demonstrated that fathers and grandfathers of children with autism are more likely to have been engaged in engineering and machine-oriented professions [16]. The solid genetic basis for the development of HFA indicates some advantages may exist for people with the condition in certain professions and careers. But this advantage needs to be recognized and supported by families and societies, and this opportunity does not exist in most Middle Eastern countries. Moreover, to the authors' knowledge, currently, there is no program or systematic services to guide individuals with autism to choose a suitable career where they can perform well and potentially excel.

In conclusion, it is paramount that solid diagnosis and supportive systems for people with HFA should be developed in less-developed countries. This requires more investment in domestic research on autism spectrum disorders in the Middle East. Moreover, considering the increasing number of children diagnosed with ASD, public awareness must be heightened on this sensitive subject. Middle Eastern cultures are generally family oriented and supportive, so family members can greatly assist in supporting people with HFA. In addition, the education and professional development of children are of great concern in most countries in the region. Parents are usually quite willing and committed to providing special care for their children with HFA, provided that they understand and appreciate their children's situations and special needs. This can be realized through different means, such as local media and awareness-raising campaigns. But heightening awareness and information of the public are not enough, and family and community support should be provided for these children. Moreover, credible international guidelines should be translated into Arabic, Persian, and other local languages and, more importantly, be adopted according to the Middle Eastern culture and social systems. Considering the culture sensitivities of the case, any detection and intervention plan should be specifically designed and implemented in Middle Eastern countries.

Conclusions

Individuals with Asperger's syndrome are not disabled and have great potential for enormous achievements, provided they are identified and supported in early childhood. Considering strong family ties in Middle Eastern cultures, it is paramount that these children should be diagnosed promptly and receive due care and training.

Abbreviations

ASD: Autism spectrum disorders; HFA: High-functioning autism.

Authors' contributions

MVF conceived the idea and developed the argument, and AT drafted the manuscript and provided evidence supporting the view. The authors read and approved the final manuscript.

Availability of data and materials

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Declarations

Ethics approval and consent to participate

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Consent for publication

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Competing interests

The authors declare that they have no competing interests.

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