SPECIAL EDUCATION IN SAUDI ARABIA: A SYNTHESIS OF LITERATURE WRITTEN IN ENGLISH

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Special education in Saudi Arabia was formally established in 1962. The earliest cited literature on special education written in English was a 1970 government report. This article presents results from the first synthesis of internationally published Saudi special education literature over a 44-year period. This synthesis yielded information about the types of publication, topics of interest, populations of interest, types of research, trends over time, and research gaps. One hundred and sixteen citations were uncovered, 45.7% of which were published in the last 5 years. The themes that emerged on models of disability, policy-research incubation period, and stages in research, indicated a developmental rather than a cultural growth perspective, implying the global nature of special education research. Insights to inform countries with a developing special education system include the need to balance research from both medical and social perspectives, and to increase intervention-based research to inform instructional practices.

Introduction

The Kingdom of Saudi Arabia (KSA) is the largest country in the Middle East with a population of 29,195,895 million in 2010 (Central Department of Statistics & Information, 2014). A nation-wide door-to-door census in Saudi indicated that approximately 135,000 or nearly 0.8% of the total population has a disability (Al-Jadid, 2013).

Education in KSA is founded on the traditional Islamic religious curriculum with input from curricula in the U.S. or the U.K. (Alquraini, 2011). Special education was formally established in 1962 with the creation of the Department of Special Learning in the education ministry. In line with the general education system, special education in KSA is also segregated by gender.

In Islam, persons with disabilities have rights to enjoy, and have duties to perform as any member of the community, and Islam supports the notion of social responsibility (Al-Aoufi, Al-Zyoud, & Shahminan, 2012). These religious principles support the global shift towards inclusive education as stated in the Salamanca Statement (UNESCO, 1994), and the Dakar Framework (UNESCO, 2000). In line with these global changes, in 2001, the Regulations of Special Education Programs and Institutes (RSEPI), modeled after the U.S. policies, were formulated. The RSEPI outlined the rights and regulations for students with disabilities requiring special education [refer to Al-Jadid (2013) and Alquraini (2011) for more information]. Internationally, KSA is classified by Anastasiou and Keller (2011) as under the 'limited special education in a developing education system' typology, along with many other Arab states.

The earliest cited literature on special education in KSA written in English and sourced from established databases was a 1970 Arabic-English bilingual report (Ministry of Education Riyadh, 1970). This investigation would be the first review of literature on special education in KSA from established databases spanning 44 years. Literature review is prized by professionals as it serves a strategic function to manage information overload and to facilitate access to the extant knowledge base (Cooper & Hedges, 1994). Even though a repository of special education reviews exists, however there are gaps in the review of the literature specific to particular countries. A cursory search did reveal one such study of the Republic of Ireland (Rose, Shevlin, Winter, & O'Raw, 2010). As information published in professional journals is known to influence policy, practice and preparation of future professionals (Mastriopieri et al., 2009), countries such as KSA will benefit from such a review.

Research objectives

The objectives were to: (a) identify the type and quantity of the publications, (b) examine the topics of interest, (c) examine the populations of interest, (d) highlight the types of research, (e) investigate trends over time, and (f) shed light on emerging themes, issues and gaps.

Method

Methods for conducting systematic reviews as suggested by the Evidence for Policy and Practice Information Center (2010) were referenced. A two-stage review was conducted.

Search Strategy

In April 2014, a keyword search was conducted in the Web of Science, SCOPUS and EBSCOHost (Academic Search Premier, Academic Search Compete, Education Research Complete, ERIC, PsycARTICLES, Psychology and behavioral Sciences Collection, PsycINFO, SocINDEX with Full Text). The keywords were: (*special education* OR *inclusive education* OR *disabilities* OR s*pecial needs* OR *inclusion*) AND *Saudi Arabia*. An expanded search was conducted: (*ADHD* OR *autism* OR *gifted* OR *speech and language disorder* OR *emotional and behavioral disorder* OR *learning disabilities* OR *dyslexia* OR *blindness* OR *deafness*) AND *Saudi Arabia*. The title and abstracts uncovered were screened based on a predetermined inclusion/exclusion criteria. Articles, standard reports, conference proceedings, and dissertation abstracts were included, but introductions to special issues, editorials, news, and book reviews were excluded. Articles that focused primarily on the medical aspect of disability were discounted. However, prevalence and epidemiological studies involving children were included as these have a direct impact on assessment and educational program planning. Publications exclusive to the adult population or babies were excluded. Once searches were carried out, electronic records of the publications were imported into the EndNote reference management software.

Coding Procedures

First stage: The coding decisions were documented in a shared Microsoft Excel data sheet. The coding categories, developed on the basis of the aforementioned research questions, were reviewed and discussed by the authors to reach a final decision. A mix of open and closed coding schemes with explicit decision rules was employed.

Types of publication. The types of publication were categorized into five reference types: journal, proceeding, chapter in book, dissertation abstract, and government report.

Topics of interest. Each publication was coded for a primary topic and, where applicable, a secondary descriptor was added. Subsequently, the topics of interest were further collapsed and recoded as areas of interest for the cross-analyses and trends over time analyses.

Populations of interest. The population of interest was coded according to the disability focus of the publication. Subsequently, the populations of interest were further collapsed and recoded as special needs categories for the cross-analyses and the trends over time analyses.

Types of research. An empirical publication was coded as experimental group, single subject, correlational, descriptive, survey, or qualitative designs (Odom et al., 2005; Mastropieri et al., 2009). Additional codes were scale validation and program evaluation. Subsequently, the empirical publications were further collapsed and recoded as either intervention or non-intervention studies for the cross-analyses and the trends over time analyses. For an intervention study, an independent variable had to be manipulated to assess its effect on at least one measurable outcome (McFarland, Williams, & Miciak, 2013). A non-empirical publication was coded as either a review or a report.

Inter-coder reliability. Inter-coder reliabilities, calculated using Cohen's kappa ($_K$) for topics of interest, populations of interest, and types of research for all publications were high, ranging from 0.91 to 0.97. A kappa above 0.81 is considered almost perfect (Landis & Koch, 1977).

Second stage: The aforementioned coding procedures sorted out the literature into meaningful categories to support this stage of analysis, which was to extract recurring themes within the published documents. Literature maps, commonly deployed as a means of identifying related themes and emergent issues from texts (Creswell, 2008) were created. Rose et al. (2010) in their review of literature had formalized this mapping process into a four-stage approach that brought literature together in an ordered manner, built around keywords, issues and themes. Their approach to analysis was suitably adapted for this review.

Results

Types and Quantity of Publication

The search yielded a corpus of 116 publications, which are marked with an asterisk and an identification number in superscript (^{*n}) in the reference section. This yield cannot be considered substantial when viewed from a 44-year span, which supported the conclusion made by Al-Jadid (2013) and Alquraini (2011) on the paucity of research in disability and special education in KSA. Eighty-three (71.6%) of the papers captured were published in peer-reviewed journals, and five (4.3%) in conference proceedings. Twenty-one (18.1%) dissertation abstracts indexed in EBSCOHost were uncovered, evidence of special education research at international postgraduate level. Out of this batch of dissertation abstracts, only two papers were published in peer-reviewed journals, viz. Alnahdi (2013) on transition services and Alquaraini (2012) on inclusive education. Three chapters in books (2.6%) were uncovered, suggesting under-representation of literature at the international level. Finally, four (3.4%) government reports were sourced from the databases.

Topics of Interest

The three most common topics of interest were epidemiology (n = 19), prevalence (n = 19), and special education in general (n = 9). There was also keen interest in teachers' attitude (n = 10), inclusive education (n = 8), gifted education and enrichment programs (n = 8), ICT/assistive technology (n = 6), and, scale adaptation and validation (n = 5). Refer to Table 1.

Table 1. Publications by topics of interest (1-2 descriptors per article)

Topic	Identification number ([n])		
Accessibility guidelines	102	Ict/at	34,68,89,102,103, 104
Analytical and creative skills	22,30	Inclusive education	10,16,25,47,48, 60,70,84
Anxiety in gifted students	33	Reading program	61
Arabic sign language	34,96,107	Math/science enrichment	29
Art-based intervention	7	Medical & educational center	63
Assessment	87	Motor development	24
Attitudes towards disability	19	Needs assessment	91
Behavioral characteristics	83	Neuro-developmental	40
Braille	97	Oral language skills	61
Characteristics	18,50,81	Parental involvement	75
Clinical correlates	50	Parental issues	15,88
Clinical literature on autism	80	Parents' belief	44
Cognitive and behavioral skills	7	Parents' education	14
Co-morbidity	18,42	Phonological processing	111
Comparative study	110	Postsecondary outcomes	23
Contemporary issues	28	Prevalence	1,4,6,8,9,12,13,20 ,43,49,58,71,72,7 6,85,86,93,115,11 6
Cross-cultural comparison	51,81, 87	Research ethics	60
Cultural/ religious contexts	32,44	Scale construction/ validation	54,67,78,83,105
Developmental profile	24,40,45	Science achievement	22
Disability trend	26,27	Screening	54,78

Early intervention	92	Sexual behavior	82
Effect of special education program	35	Sociodemographic profile	56,65,85
Employability	35	Special education	46,89,94,95,98,99 ,103,112,113
Enrichment model/program	29,30,31,64	Special education teacher	66,69
Epidemiology	2,3,17,21,36,52,53,55,62, 71,73,74,90,100,101,106, 108,109,114	Special educator preparation	79,104
Evaluation of program	84	Student self-concept	25
Functional behavior assessment	11	Teacher competency	77
Gender and exceptionality	57	Teachers' attitude	5,10,11,16,37,39, 47,48,51,70
Gifted education	28,32,64,65	Transition services	38,39
Health disorders	76	Transition to work	23
Hearing aid	41	Vision-related quality of life	67
Hearing loss	86		

Populations of Interest

The most common was the all/various type of disability category (n = 28). Others include hearing impairment [HI] (n = 16), autism spectrum disorder [ASD] (n = 14), gifted and talented (n = 13), intellectual disability (n = 11), visual impairment (n = 10), attention deficit/hyperactivity disorder [ADHD] (n = 7), and learning disabilities [LD] (n = 3). Refer to Table 2.

Table 2. Publications by (a) populations of interest and by (b) types of research

Population	Identification number (^{n})		
All/ various disability categories	2,15,21,19,25,26,27,35,37, 46,51,55,58,60,66,70,84, 92,93,94,95,98,102,103,10	Fragile-x syndrome	45

	6,112,113		
Adhd	6,7,18,42,43,85,78,	Gifted and talented	20,22,28,29,30,31,32,33, 64,65,69,83,91
Asd	14,16,24,44,50,56,57,68,8 0,81,82,101,105,110	Hearing impairment	3,4,8,23,34,36,41,49,62,7 1,74,96,107,114,115,116
Behavioral disorder	54	Intellectual disability: (mild to severe)	11,38,39,47,48,72,75,76, 77,87,88,
Cerebral palsy	12,52,100	Learning disabilities	10,61,79
Neuro-developmental disorder	40	Neurological disorder	9
Down's syndrome	63,86	Typically developing students	111
Emotional behavioral problems	1,13	Visual impairment	17,23,53,67,73,90,97, 104,108,109,
Epilepsy	5		

Empirical research	Identification number (^{n})	**Non-empirical research**	Identification number (^{n})
Descriptive	1,2,3,4,6,8,9,12,13,15,17,1 8,20,21,24,34,36,40,42,43, 45,49,50,52,53,55,56,57,5 8,62,63,71,72,73,74,76,81, 85,86,87,90,93,96,98,106, 108,109,110,111,114,115, 116	Review	26,27,28,31,32,34,46,68, 80,101,102
Survey	5,10,11,14,16,19,22,23,25, 33,35,37,38,39,41,47,48, 51,60,65,66,82,88,93	Report	69,92,94,95,112,113
Scale validation	54,67,78,83,105		
Quasi-experimental	7,29,30,61		
Qualitative	44,103,107		
Program evaluation	79,84		
Case study	64		

Types of Research

There were 90 empirical and 17 non-empirical studies (Table 2). Nine publications were uncoded due to lack of information. The epidemiological and prevalence studies were coded as descriptive research, whereas the non-medical descriptive studies were mostly survey studies. The breakdown for empirical studies were descriptive (n = 52), survey (n = 24), scale validation (n = 5), quasi-experimental (n = 4), program evaluation (n = 2), qualitative (n = 3), and case study (n = 1). The analysis did not uncover any single-subject research design studies. Eleven review papers and six report-based papers, which included national summaries, were coded.

Cross-analyses

The topics of interest were collapsed and recoded into 13 areas of interest, and populations of interest were collapsed into 10 special needs categories (Table 3). In general, epidemiology and characteristic/developmental profile studies covered many special needs categories. Gaps in many areas of interests across different types of special needs categories were indicated by gaps in the table cells. Many crucial areas of interest were missing, such as those on special education processes (e.g. Individualized Education Plan), and instructional issues on content area learning (academic or social). The empirical research category was collapsed and recoded to reveal only five intervention studies, three of which were in gifted education (Table 4). The non-intervention studies were quite well-spread across the areas of interests and special needs categories (Table 4).

Table 3. Cross analysis: Areas of interest vs. special needs categories

Areas of interest	0 *n* %	1 *n* %	2 *n* %	3 *n* %	4 *n* %	5 *n* %	6 *n* %	7 *n* %	8 *n* %	9 *n* %	10 *n* %	**Total** ***n*** **%**
Epidemiology/prevalence		*6* 5.2	*3* 2.6	*11* 9.5	*6* 5.2	*4* 3.4	*1* 0.9	*1* 0.9		*2* 1.7	*4* 3.4	***38*** **33.6**
Characteristics/profile	*1* 7.1		*3* 2.6			*1* 0.9	*5* 4.3	*3* 2.6			*1* 0.9	***14*** **12.4**
Special education		*7* 6.2	*2* 1.7						*1* 0.9			***10*** **8.8**
Disability issues		*5* 4.4					*3* 2.7				*1* 0.9	***9*** **8.0**
Gifted education								*8* 6.9				***8*** **7.1**
Inclusive education		*4*	*2*				*1*		*1*			***8***

		3.5	1.8				0.9		0.9		**7.1**
ICT/AT		*2* 1.8			*1* 0.9	*1* 0.9		*1* 0.9			***5*** **4.4**
Parental issues		*1* 0.9	*2* 1.8				*2* 1.8				***5*** **4.4**
scale development					*1* 0.9	*1* 0.9	*1* 0.9	*1* 0.9		*1* 0.9	***5*** **4.4**
Alternative communication				*3* 2.7	*1* 0.9						***4*** **3.5**
transition		*1* 0.9	*2* 1.8	*1* 0.9							***4*** **3.5**
Instruction						*1* 0.9			*1* 0.9		***2*** **1.8**
Early intervention		*1* 0.9									***1*** **0.9**
Total	***1*** **0.9**	***27*** **23.9**	***14*** **12.4**	***16*** **14.2**	***9*** **8.0**	***7*** **6.2**	***14*** **12.4**	***13*** **11.5**	***3*** **2.7**	***3*** **2.7**	***6*** **5.3**	**113**

0=typical students; 1=all disabilities; 2=intellectual disabilities; 3=hearing impairment; 4=visual impairment, 5=ADHD; 6=ASD; 7=gifted; 8=learning disabilities; 9=emotional & behavioral problems; 10=physical and health disorders

Table 4. Cross-analyses: (a) Areas of interests vs. types of research (b) Special needs categories vs. types of research

Areas of interests	Empirical	Non-empirical

	Intervention	Nonintervention	Review	Report
	n (%)	*n* (%)	*n* (%)	*n* (%)
epidemiology/prevalence		36 (33.0)	1 (0.9)	
characteristics/ profile		12 (11.0)		1 (0.9)
special education		4 (3.7)	1 (0.9)	4 (3.7)
disability issues		6 (5.5)	3 (2.8)	
gifted education	3 (2.8)	2 (1.8)	3 (2.8)	
inclusive education		8 (7.3)		
ICT/AT		3 (2.8)	2 (1.8)	
parental issues		5 (4.6)		
scale validation		5 (4.6)		
alternative communication		2 (1.8)	1 (0.9)	
transition		4 (3.7)		
instruction	2 (1.8)			
early intervention				1 (0.9)
Total	5 (4.6)	87 (79.8)	11 (10.1)	6 (5.5)
Special needs categories				
Typical student		1 (0.9)		
All disabilities		18 (16.5)	4(3.7)	5(4.6)
Intellectual disabilities		13 (11.9)		
Hearing impairment		15 (13.8)	1 (0.9)	
Visual impairment		7 (6.4)		
ADHD	1 (0.9)	6 (5.5)		
ASD		11 (10.1)	3(2.8)	
gifted	3 (0.9)	5 (4.6)	3(2.8)	1(0.9)
Learning disabilities	1 (0.9)	2 (1.8)		
Emotional and behavioral		3 (2.8)		

Physical and health		6 (5.5)		
Total	5 (4.6)	87 (79.8)	11 (10.1)	6 (5.5)

Trends over Time Analyses

Trends over time were analyzed in five-year interval periods (Table 5). There was an upward trend during the 1985-1989 period, followed by a drop during the 1990-1994 period. Subsequently, the literature yield stabilized for the next 15 years. The most notable trend was that almost half of the total yield in this review (45.7%) was published during the last five years, suggesting a positive future trend. In contrast to areas of interest and special needs categories, which expanded over time, the types of research stayed constant with non-intervention research.

Table 5. Trends over time (1970 -2014)

Areas of interest	70- 74	75-79	80-84	85-89	90-94	95-99	00-04	05-09	10-14
	n	n	n	n	n	n	n	n	n
Epidemiology/prevalence			1	3	1	9	13	4	7
Characteristics/ profile				2	1		1	3	7
Special education	1	2	2	2		2		1	1
Disability issues				1		1			7
Gifted education				1					7
Inclusive education				1				1	6
ICT/AT						1		1	4
Parental issues				1			1		3
scale development								3	2
Alternative communication				1					3
Transition									4
Instruction							1		1
Early intervention									1
Total	1	2	3	12	2	13	16	13	53
Special needs category									
Typical children									1
All disabilities	1	2		3		6	3	0	12
Intellectual disabilities			1	2			4	1	6
Hearing impairment			1		1	6	2		6
Visual impairment				3			1	3	2
ADHD							1	2	4
ASD							1	3	10
Gifted				2	1			2	8
Learning disabilities							1	1	1
Emotional and behavioral							2		1

Physical and health				2			1	1	2
Total	1	2	2	12	2	12	16	13	53
Types of research									
Empirical							1		4
Intervention									
Non-intervention		1	1	9	1	11	13	13	38
Non-empirical									
Review							1		10
Report	1	1		2		1			1
Total	1	2	1	11	1	12	15	13	53

Emergent Themes and Gaps

*Medical and social model of disability***.** The synthesis revealed the medical nature of the publications. Epidemiological and characteristic studies, which included etiology, prevalence, characteristics, developmental profile, and risk factors studies, dominated the publications (44.9%). The large number of medical-based publications implied that KSA might still be rooted in the medical model of disability. The decision at the onset to include epidemiological studies in this review has shed light on the discrepancy between publications from the medical and social perspectives.

Program outcomes. Six studies evaluated the outcomes of small- or larger-scale programs: Al-Hoshan (2010), and, Almuaqel and Elbeblawi (2012) on transition to work programs; Aljughaiman (2011), and, Aljughaiman and Ayoub (2012) on gifted programs; Issa Haimour (2013) on special education programs in inclusive schools; and Hussain (2009) on LD teacher preparation programs.

Attitude towards inclusive education. Five out of eight studies on inclusive education investigated teachers' attitudes. Some factors that were found to influence attitude include education area, teaching experience, having a relative with disability, type of disability, and gender (Al-Ahmadi, 2010; Al-Faiz, 2007; Alquraini, 2012; Alsalhe, 2012; Dubis, 1988).

Multinational collaboration. All five publications that involved multinational collaboration across the Arab region were on symptoms of autism. Amr, Raddad, El-Mehesh, Mahmoud, and El-Gilany (2011), and Amr et al. (2012) collaborated across Jordan, KSA, and Egypt. Another group of researchers (i.e. Hussein, Taha & Almanasef, 2011; Taha, Hussein & Almanasef, 2013) collaborated across Egypt and KSA. A bigger multinational collaborative research effort to validate an Arabic version of an autism screening tool in nine Arab countries was reported by Seif Eldin et al. (2008).

Cross-cultural studies within the Arab region. The first strand of cross-cultural studies involved cross-cultural comparison within the Arab region as already highlighted in the above-mentioned theme. According to Amr et al. (2012) such comparisons were justified because, despite similarities in religion and language, diversity of social,

cultural, and economic factors exists. KSA has a much higher national income, but the rate of social change is faster in Egypt and Jordan.

Cross-cultural comparisons with Western systems. The second strand of cross-cultural studies involved Arabic versions of tools adapted from Western systems. For example, Kearney, Smith, and Tillotson (2002) examined Saudi students to determine whether commonly used instruments for cognitive functioning and adaptive behavior would predict level of mental retardation. Their findings support a degree of congruence among youth with mental retardation in the U.S. and in KSA. Similarly, other studies on tools adaptation and validation (e.g. Khusiafan, Hastings, & Sonuga-Barke, 2004; Seif Eldrin et al., 2008) also indicate that in general the findings in the Arab region replicated those from Western countries.

Gender and special needs. Nine studies were solely on males: emotional and behavioral problems (n = 3), HI (n = 2), gifted students (n = 2), ADHD (n = 1), and autism (n = 1). By contrast, three studies were on female students: gifted (n = 1), language disability (n = 1), and ADHD (n = 1).

Limitation of Study

Six of the dissertations from the 1980s and two conference papers (1980 & 1999) did not have abstracts, therefore some coding categories were incomplete.

Discussion and Implication

First, the findings confirm that this paper is the first review undertaken on Saudi special education literature published in established international databases. The findings suggest a gap in publications rooted in the social model of disability that covers social, cultural, environmental, and educational aspects of special needs (Gallagher, Connor, & Ferri, 2014).

Another important insight was the 10-year incubation period for publications to be disseminated internationally after implementation of policies (surge in publications was after 2010). We suggest that reviews of literature in other nations be conducted to either confirm or dispute this incubation period, especially in Middle Eastern countries, which appear to have progressed along a similar trajectory (IBE-UNESCO, 2007).

As seen in this synthesis, there is a need to support the emergent research and publication culture in KSA. Growth in research can be accelerated through multinational collaboration across the Arab region, as similarities in language, culture, and religious sensitivities potentially allow for larger-scale studies that would contribute towards psychometric impact. Countries with a longer history could also contribute through cross-cultural adaptation and validation of scales. The scales used in the Saudi research are adapted from English versions.

This review also illustrates that special education research in KSA can be described in terms of developmental stages. According to Levin, O'Donnell, and Kratochwill (2003), a program of educational research can be seen to occur in four stages. The first stage would involve preliminary ideas, observations, and pilot work, which qualitative and correlational methods allow. The second stage would involve controlled classroom experiments and classroom observational studies using quasi-experimental, single-subject, and qualitative methodologies. The third stage would involve knowledge generated from previous stages to design well-documented intervention and to prove effectiveness in natural settings. The fourth stage would involve determination of the factors that lead to the adoption of effective practices in typical school systems under naturally existing conditions. The findings suggest that research in KSA is still predominantly in the first stage as described by Levin et al. (2003).

For one, this review has identified that research interests were still quite narrow, with several potential imbalances in the foci of research. An obvious research gap was with respect to content area learning and instructional service delivery, topics that are primarily in the second and third stages of educational research. Previous findings in international literature (e.g. Mastropieri et al., 2009) also indicated that content area learning has historically been identified as lacking in research attention. Additionally, research on program outcomes, which constitute the third and fourth stages of educational research, also received less attention, which was also in line with international literature (Rose et al., 2010). It is thus implied that the emergent research culture in KSA needs to be boosted to move beyond the first stage of research into classroom experiments, effectiveness, and intervention research.

With respect to populations of interest, most publications addressed a combination of disabilities, which was in line with the analysis by Mastropieri et al. (2009). Trends in the last five years also indicated a proliferation of research in the more contemporary disability categories such as ASD, ADHD, and gifted and talented. However, there were only three publications on LD, a sharp contrast to the yield in other international reviews (e.g. MacFarland et al., 2013). Possibly this is because LD is academic-based, whereas most of the yields from this synthesis are clinically-based.

As for types of research, only five publications were intervention studies, therefore providing evidence that research in KSA is still lagging at the second stage of the research framework. Previous international reviews also indicated a smaller proportion of intervention-based research (Mastropieri et al., 2009; McFarland et al., 2013). Odom et al. (2005) has highlighted that special education research may be the 'hardest of the hardest-to-do science' because of the complexity of the special education field. The low prevalence of some disability categories, and the heterogeneity of the students with special needs pose a significant challenge to research design requiring equivalent groups and random assignment which is necessary for group-based intervention studies. This complexity is also reflected in the current review, as the Saudi intervention studies were mostly confined to those on gifted children.

Odom et al. (2005) proposed that single-subject research design might be a better fit for special education, given the difficulty in using experimental group design. This synthesis found a glaring gap in the non-usage of single-subject research design, which was in contrast to international trends (Horner et al., 2005). Single-subject research design should therefore be adopted, as this research design may just be the catalyst needed to propel educational research beyond the first stage in KSA.

The discussion elicited up to this point (i.e. models of disability, incubation period, stages in research) indicated a developmental growth perspective to describe special education research in KSA. This synthesis therefore supports the typological rather than the geographical approach (Anastasiou & Keller, 2011) towards understanding international differences, which lends credence to the notion of a shared global perspective in special education.

However, a major gender-based theme did emerge that is specific to religion and culture. The findings uncovered the threat of disproportionality in research related to gender in KSA. Internationally, female under-representation in special education is now of significant concern to educators (Oswald, Best, Coutinho & Nagle, 2003).

Conclusion

This synthesis documents the foci of interests and special education research trends in KSA. Gaps in knowledge areas that still lack a firm empirical database are highlighted, providing insights for future research priorities. We suggest a determined effort to publish postgraduate level dissertations and the use of single-subject research design to increase intervention-based research. The findings also provide insights to inform other countries with a developing special education system. Specifically, the findings indicate the need (a) to conduct literature reviews to check and balance research perspectives, (b) to reduce the policy-research incubation period, and (c) to identify the current stage of research and determine steps to move to a higher research stage.

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