

Special Education in Saudi Arabia: A Descriptive Analysis of 32 Years of Research

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Abstract

Saudi Arabia has produced more peer-reviewed research in the past 10 years than ever before (El-Showk, 2016). The country is leading its Arab counterparts in the annual number of both published scientific research and obtained patents. A review of the published research across topics and fields of study, the research designs used, and the populations targeted, is needed in various fields to move related scientific research forward. The current review addresses the Saudi Arabian research related to special education during a 32-year period; that is, between 1984 and 2016. This review identified 3,381 relevant publications, yielding 499 publications that met the criteria for inclusion in the analysis. These studies were analyzed to determine any trends of publication, language used for publications, use of interventions, research design, participants, settings, research topics, and affiliation of the authors. The discussion notes drawbacks and highlights areas for further consideration by special education researchers in Saudi Arabia.

Key Words: Saudi Arabia, special education, special education research, research synthesis

SPECIAL EDUCATION IN SAUDI ARABIA: A DESCRIPTIVE ANALYSIS OF 32 YEARS OF RESEARCH PUBLICATIONS

Although Saudi Arabia continues to fall behind the top 30 countries in the publication of scientific research across fields, its researchers have made significant strides in improving the quantity and quality of its scientific research publications (Nature Index, 2017). As a country, Saudi Arabia currently leads the Arab countries in the annual number of scientific research publications (Nature Index, 2017), obtained patents (World Intellectual Property Organization, 2018), and the amount of financial investment in education (Yahia, 2016).

According to the Nature Index (2017), Saudi researchers are producing more research, however, the body of extant research publications does not equally represent the fields of social sciences, politics, economics, and education. Specifically, research articles related to natural science, engineering, technology, medical and health sciences, politics, and economics dominate the publications produced in Saudi Arabia with thousands of published articles. In contrast, research in the field of education is significantly lacking, with the social sciences represented by only a few hundred publications. Such results are alarming for a country openly engaged in comprehensive and long-term efforts to transform and modernize its political, social, economic, and educational contexts.

LITERATURE REVIEW

The noticed disproportionate focus of scientific research in Saudi Arabia, especially for the field of education, is surprising. In the new Saudi 2030 Vision, education is considered an important tool for transforming the country both socially and economically (Saudi Vision 2030). To positively impact education in Saudi Arabia overall, and special education specifically, the field requires research that reflects the state of services and their impact on students, society, and economic development. To determine the state of that research, however, research is needed that examines the current Saudi special education publications, identifying the strengths and the gaps in the extant literature. Such research would help shed a light on what the field has achieved and what still needs to be achieved, helping to direct resources to the most needed areas for research.

In relation to studies on the state of special education research in Saudi Arabia, there were only three peer-reviewed studies published in either Arabic or English that attempted to address this urgent need (e.g., Alhano, 2016; Alkhateeb et al., 2016; Altamimi et al., 2015). It is surprising that these three were the only studies found that explored characteristics of the special education literature in Saudi Arabia, which is a goal shared by the current study. This current study reexamines some of the questions introduced in these three studies, although at a larger scale, by looking at the current research published in either Arabic or English. In addition, this study addressed aspects of research that are yet to be addressed by special education publications in Saudi Arabia. Before embarking on the current research, therefore, the researchers reviewed each of these three studies in detail.

In the first study, Altamimi et al. (2015) reviewed special education literature published internationally in relation to Saudi Arabia between 1970 and 2014. In their synthesis, Altamimi et al. considered only publications written in English and included book reviews, book chapters, government reports, conference proceedings, and dissertation abstracts. Utilizing a set of inclusion and exclusion criteria, Altamimi et al. were able to uncover 116 publications that were subject to the review. Furthermore, the authors reported results related to the type and quantity of publications, topics of interest, populations of interest, and types of research. Their findings showed that a significant amount of the reviewed citations (45.7%) were published between 2009 and 2014. Altamimi et al. also found that approximately two-thirds of the citations they reviewed were published in peer-reviewed journals, among which were two doctoral dissertations. In terms of the topic, almost half of these publications approached special education from medical and social perspectives, highlighting topics such as the prevalence of disability and students' characteristics. More interestingly, less than 1% of the

publications they reviewed studied the outcomes of educational programs, or behavioral and academic interventions.

In the second study, Alkhateeb et al. (2016) reviewed and analyzed studies related to the inclusion of individuals with developmental disabilities published in English between 1990 and 2014 from 21 Arab countries. Alkhateeb et al. considered doctoral dissertations, master's theses, and peer-reviewed journal articles. Their findings indicated that there were only 42 empirical studies focused on inclusion for individuals with developmental disabilities in Arab countries, among which eight studies were from Saudi Arabia. When they further investigated these eight studies, they found that six used survey research methods and were published between 2012 and 2014, and addressed attitudes toward, perceptions of, and effectiveness of inclusive education.

In the third study, Alhano (2016) reviewed the special education research published in 10 peer-reviewed Arabic journals from 2005 to 2014. The chosen journals are well-known for publishing special education research from 21 Arab countries, and target many disciplines including humanities, psychology, consultation, special education, and rehabilitation. The list of these journals was generated through communications with faculty members in some Saudi universities. Alhano's purpose was to investigate the extent to which qualitative research methodology is used in the field of special education in Arab countries. Furthermore, for studies that used qualitative methods, Alhano completed a comprehensive evaluation of the quality of the research using an assessment tool suggested by Schou et al. (2012). In general, Alhano found 348 special education studies published from Arab countries in the ten specified journals. His findings indicated that only three studies used qualitative methods, 322 studies used quantitative methods, three studies used mixed methods, and the remaining 20 studies were categorized as literature reviews. In terms of the quality of the qualitative studies, Alhano reported that all three met the prescribed quality indicators suggested by Schou et al. (2012).

Although these three syntheses provided significant contributions to the field and in uncovering some of the ambiguity associated with the state of special education in Saudi Arabia, they approached reviewing Saudi Arabia's special education literature from a narrow perspective that was limited to either a specific topic (e.g., inclusive education; Alkhateeb et al., 2016), specific language (e.g., publications written only in English; Altamimi et al., 2015), or specific journals (e.g., publications in Arabic from 10 well-known special education journals; Alhano, 2016). Furthermore, except for Altamimi et al. (2015), which included special education literature related to only Saudi Arabia, Alkhateeb et al. and Alhano opened their

investigation to include publications from the other 20 Arab countries. Also, Alhano focused on research published only in the Arabic language, while Alkhateeb et al. and Altamimi et al. focused on research published only in English. Therefore, the field would benefit from a more comprehensive and reflective description of the existing peer-reviewed research on special education in Saudi Arabia, including the research published in the last 32 years.

PURPOSE

Saudi Arabia's unprecedented effort to use scientific research to transform the social, educational, and economic backgrounds across the country should be monitored and guided through periodic assessment of the extant published research (e.g., scope, research methodology, targeted populations, outcomes, findings, and implications). For example, currently, there are a markedly small number of research articles on special education in Saudi Arabia published in either Arabic or English, with only three special education reviews available in the literature (e.g., Alhano, 2016; Alkhateeb et al., 2016; Altamimi et al., 2015). Interestingly, these were the only literature reviews published up through 2016, possibly implying that special education is a new field in Saudi Arabia, as well as in other Arab countries. However, the review of these three literature reviews suggests not only a shortage of syntheses of special education research in Saudi Arabia but also a limitation in the comprehensiveness reflected in these literature reviews.

The purpose of this study, therefore, is to report on a comprehensive review of research on special education in Saudi Arabia published in peer-reviewed journals, providing information on the characteristics (e.g., language, journal, use of an intervention, research methodology and design, participants, topics) of the extant research and any trends identified. Therefore, the examination of these 32 years of special education publications (peer-reviewed journal articles) in Saudi Arabia is guided by the following questions:

1. What is the publication trend, and what language is mostly used in these publications?
2. What type of study designs are mostly used in these publications and to what extent do they involve interventions?
3. What are the characteristics of the participants in these studies regarding their status, gender, disability category, placement, and grade?
4. What topics are frequently searched in these publications?
5. What are the primary sources from which these publications were produced?

METHOD

To fill gaps that remained after previously published research syntheses on special education in Saudi Arabia, this literature review included publications written in both Arabic and English and included only research published in peer-reviewed professional journals. Since the first special education teacher preparation program in Saudi Arabia began in 1984, a literature search was conducted to identify research published from 1984 through 2016. It is noteworthy to say that special education teacher preparation started at King Saud University with only four disability categories (i.e., Intellectual Disabilities, Visual Impairment, Deaf/Hard of Hearing, and Physical Disabilities). Across a span of 36 years, more disability categories were addressed, including Learning Disabilities in 1996, by additional teacher preparation programs. Currently, there are more than 17 universities with teacher preparation programs for special education teachers, 16 of which were developed after 2005.

Criteria for Inclusion

Research studies included in this review (a) were published in peer-reviewed professional special education journals, (b) were published in either Arabic or English, (c) were published between 1984 and 2016, (d) addressed some aspect of special education in Saudi Arabia, and (e) were available internationally through online services. Note that doctoral dissertations and master's theses were not included in this review, although they were included in previously published literature reviews.

Search Procedures

A comprehensive search process was used to identify all relevant published research. Multiple common databases used internationally were employed to identify research published in both English and Arabic, including ERIC, EBSCO, PsycINFO, Academic Search Complete, Scopus, JSTOR, Academic Source Premier, ProQuest, and ProQuest Education. In addition, databases known for publishing articles written in Arabic were also employed, including Saudi Digital Library, Al-Manhal, and Al-Mandooamah. A primary descriptor of "Saudi Arabia" was used both in isolation and in combination with a set of keywords, including special education, special needs, handicap, disability, inclusion, inclusive education, special education assessment, learning disability, intellectual disabilities, mental retardation, deafness, hearing impairment, visual impairment, speech-language impairment, attention-deficit/hyperactivity disorder, multiple disability, physical disability, and autism.

The eligibility of each research publication for inclusion in this review was evaluated using a three-phase process. First, each research publication was identified by one or more of the database searches, which produced a

list of 3,381 related studies. Second, the title and abstract of each of these research publications were reviewed by the authors to verify the publication's relevance to this review, resulting in the identification of 674 publications that met the inclusion criteria. Third, citations across lists of research publications from the various databases were compared to identify and eliminate any duplications, yielding a final list of 499 research publications that met the inclusion criteria and were eligible for coding.

Coding Procedures

An Excel coding sheet was used to summarize the reviewed research publications in relation to the following attributes: (a) language (Arabic or English), (b) participant characteristics (e.g., type, gender, grade), (c) disability category, (d) research design, (e) use of intervention (f) setting, and (g) researcher affiliation. For preparing the data for the analysis phase, a coding matrix was used with a list of possible options within each coded attribute represented by a numerical value (e.g., English was represented by 1; Arabic was represented by 2). The research publications were then organized into folders representing the 10 disability categories recognized by the Saudi Arabia's Special Education Laws and Regulations (Ministry of Education, 2002). Using a shared Excel sheet comprising the agreed-upon list of codes per attribute, the researchers divided the disability category folders, and independently coded the research articles in their assigned folders.

To ensure consistency in applying the coding sheet, the first two authors co-coded 5% of the studies collaboratively (inter-rater reliability = 92%). Once inter-rater reliability was verified to be above 80%, the folders of research publications grouped by participants' disability were divided between the first two authors. During the independent coding process, these two authors kept written notes on any publications for which information was missing related to the codes, or which resulted in confusion about the coded attribute. After coding 30% of their assigned studies, the two first authors met to reflect on the coding process, which led to the addition of options for some of the attributes coded (e.g., others, not specified, does not apply, was not reported). This reflection meeting resulted in a more comprehensive and clear coding sheet, which led to higher inter-rater reliability for the remainder of the coding process.

RESULTS

Coded data for the 499 research studies included in this review were transferred to the Statistical Package for the Social Science v. 25 (SPSS) for analysis. The researchers used a combination of frequency and crosstab analyses to address the research questions. The following are the results organized by themes that reflect the research questions.

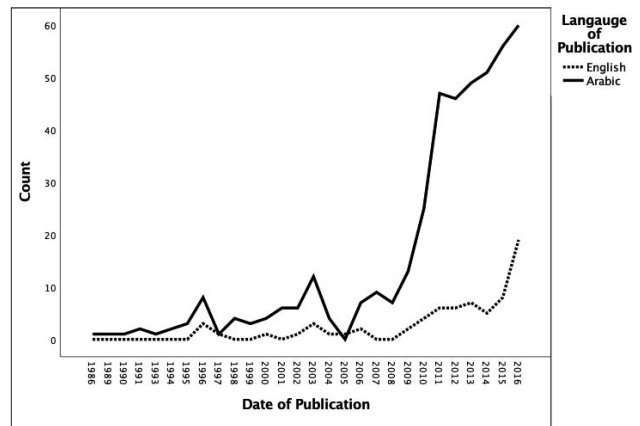


Figure 1: Trend of Special Education Publications in Saudi Arabia, 1984-2016.

Publication Trends

Our search did not identify any study related to special education in Saudi Arabia published between 1984 and 1986 (see Figure 1). Of the 499 studies published after 1986, 22% were published in either Arabic or English during the 24-year period between 1986 and 2010, and 78% were published during the 6-year period between 2010 and 2016. This indicates a clear increase in the rate of publications related to special education occurring over time. In addition, our review indicated that 86% of these special education publications appeared in Arabic, compared with 14% appearing in English.

Research Methodology

The data also showed that, of the 499 coded studies of special education in Saudi Arabia, 51.3% used only survey design. Other studies used quantitative methodologies (e.g., experimental, and non-experimental; 45.5%), qualitative methodologies (e.g., interviews, observations, field notes; 2.4%), mixed methods research designs (0.6%), and single-subject research designs (0.2%). Further, of the 499 coded studies, only 27.7% included an intervention in the research design. These data indicate a preponderance of studies reliant on information gathered through surveys.

Participants

The data indicated that of these 499 studies, 54.5% (n = 272) included individuals with disabilities, 19% (n = 95) included teachers, 8.2% (n = 41) included family members, 0.6% (n = 3) included administrators, 1% (n = 5) included supervisors, 2.6% (n = 13) included student-teachers, 1.2% (n = 6) included faculty members, 8.5% (n = 43) included multiple types of participants, and 4.4% (n = 22) included other types of participants (e.g., nurses, bankers, school-bus drivers).

Regarding the participants' gender, 38.3% (n = 191) of the studies included only male participants, 17.6% (n = 88) included only female participants, and 37.1% (n = 190) included both male and female participants.

185) included both male and female participants. However, the data also show that 5.8% (n = 29) of the studies did not report the gender of participants; also, among the reviewed studies, reporting the gender was coded as irrelevant for 1.2% (n = 6) of the studies.

Disability Categories

The focus here was on the disability category that was the subject of the study, regardless of the type of the participants (e.g., students, family members, or service providers). Accordingly, among the 499 coded studies, there are studies that addressed learning disabilities (20%), intellectual disabilities (15%), deaf/hard of hearing (16.4%), giftedness (3.4%), visual impairment (4.8%), speech-language impairment (0.4%), attention-deficit/hyperactivity disorder (2.4%), multiple disabilities (1%), physical disabilities (1.6%), autism (12.2%), or emotional/behavioral disabilities (0.2%). Furthermore, while 66 (13.2%) of the coded studies addressed individuals of different disability categories, 46 (9.2%) of the coded studies did not report data regarding the specific disability categories they addressed.

Settings

Studies were conducted in several types of settings. The majority of the studies were conducted in self-contained classrooms (18%), special education institutions (15.6%), and university settings (e.g., students attending for undergraduate credit hours; 11.6%). In addition, fewer studies were conducted in inclusive settings (e.g., general classroom; 10.4%), private settings (e.g., private schools, after school private programs; 4.2%), and hospitals (4%), and in students' homes (1%). In 17% of the studies, research was conducted across multiple settings (e.g., classrooms, hospitals, home, and university). Data also indicated that ten studies were conducted in settings other than those considered in this review, which represented only 2% (e.g., workplace, or public transportation). However, coding the setting was considered irrelevant for five studies (1%), such as the study that analyzed the image of individuals with disabilities in the media, or the studies that analyzed special education policies in Saudi Arabia. Finally, 75 studies (15%), although indicated sampling from students with special needs, they did not report the settings from which they drew the sampling of their participants.

School Grades

The school grades that were considered in the reviewed publications were pre-kindergarten (0.2%), kindergarten (3.8%), elementary grades (21.6%), middle school grades (5.8%), high school grades (1.2%), and students at the university level (11%). Some studies included participants from more than one grade level (10.8%). Other studies were conducted in settings beyond

those listed in the coding sheet (0.6%), such as a study addressed special education legislation in Saudi Arabia. Also, identifying the grade level was considered irrelevant for 70 studies (14%), such as the studies that addressed individuals with special needs at homes, hospitals, workplaces, public transportation, or on social media platforms. However, a significant percentage of the reviewed studies (30.9%) did not report the grade level of their participants, despite indicating that the study was conducted in an educational setting or with school-age participants.

The Researched Topics

The 499 reviewed studies covered a wide range of topics, including causes of disability (3.6%), characteristics (7.4%), prevalence (2.6%), quality of life (4.8%), Individualized Educational Program (1.8%), language abilities (3.8%), social skills (6.0%), study skills (2.4%), functional skills (2.0%), behavior management skills (8.0%), family issues (6.0%), as well as emotions and feelings (2.8%). Other topics were related to literacy (6.2%), math (2.4%), science (0.8%), evidence-based practices (0.4%), assistive technologies (1.0%), educational technologies (2.2%), special education-related services (2.2%), inclusion (6.2%), transition (1.6%), disability awareness (3.0%), program evaluation (0.4%), scale development (1.2%), and job satisfaction (1.8%). Also, the most commonly searched topics were about effectiveness of teacher preparation programs (9.8%) and quality of special education services (9.4%). However, it should be noted that these percentages are across all 499 of the reviewed studies; however, if the disability categories were to be considered, these percentages would be different, as these topics were not equally searched across disability categories.

Types of Affiliations of the Researchers

Researchers with different types of affiliations contributed to the reviewed publications, including researchers affiliated with Saudi universities (93.2%), the Ministry of Health (2.2%), the Ministry of Education (0.8%), and the Ministry of Social Affairs (0.2%). Some studies were conducted through collaboration among researchers with different types of affiliations (1.6%). In addition, 2% of the reviewed studies were conducted by researchers with no identified affiliations.

Crosstab Analysis

Further analyses were conducted using cross tabulation. Upon review, only two crosstab analyses were meaningful and of immediate interest. First, the findings related to the use of interventions were analyzed in light of the disability categories. Findings indicated that the majority of the studies in each disability category did not include interventions. In other words, the finding that of

Table 1
Percentages and Numbers of Studies that included/did not include interventions across disability categories

Disability Category	Reviewed Studies	Included Intervention		Did Not Include Intervention	
	Total	N	%	n	%
Learning disabilities	100	44	44.0%	56	56.0%
Intellectual disabilities	75	24	32.0%	51	68.0%
Deaf/hard of hearing	82	23	28.0%	59	72.0%
Autism	61	21	34.5%	40	65.5%
Remaining disability categories	181	26	14.4%	155	85.6%
Total	499	138	27.6%	361	72.3%

Note. This included: giftedness, visual impairments, speech/language impairments, ADHD, multiple disabilities, physical disabilities, and emotional/behavioral disorders, as well as the codes representing studies that included more than one disability category, and studies with no specific disability profile.

the 499 reviewed studies did not include interventions in their designs was also apparent among studies within each disability category (see Table 1). Also, the majority of the studies (81%) in which interventions were included were conducted with students from only four of the disability categories (learning disabilities, intellectual disabilities, deaf/hard of hearing, Autism). Of these studies, 37% were conducted with students in the elementary grades, while 10.8% were conducted with students in the secondary grades.

A second crosstab analysis addressed the study settings. In one instance, the study setting variable was reviewed in relation to the study designs. In this regard, most of the studies that considered inclusive settings (e.g., general education classroom), used either survey or correlational methods (71%). Approximately one fourth of the studies that targeted inclusive settings (28%) included evaluation of practices or interventions. In contrast, more than one third (38%) of the studies that included interventions were conducted in isolated settings (i.e., self-contained classrooms and special education institutions). In another instance, the study setting was reviewed in relation to the participants' grade level in school, highlighting several observations. For example, most of the studies that targeted individuals with disabilities attending their undergraduate or graduate studies were conducted within the university setting (87%), and mostly used survey designs (63%). Also, most of these studies targeted individuals with learning disabilities or intellectual disabilities or individuals who were deaf/hard of hearing (41%), taking into consideration the fact that 27% of these studies did not specify the disability categories of their participants.

DISCUSSION

This study reviewed special education publications in Saudi Arabia during a period of 32 years, with special consider-

ation given to the language of publications, use of interventions, characteristics of participants, research methodologies, searched topics, and the researchers' types of affiliations. The data revealed results that either strengthened or extended the findings from previous syntheses. For example, this study's finding about the trend of publications is consistent with findings reported by Altamimi et al. (2015); that is, most (46%) of the special education publications published in English were produced between 2008 and 2014. Our findings indicate that when reviewing publications in both English and Arabic languages, the percentage of publications between 2008 and 2016 represented a larger percentage of the special education research (82%), than those previously suggested by Altamimi et al (2015).

This sharp increase in the number of publications is very interesting and deserves further investigation. However, a look at the data about type of affiliations indicates that the majority of publications were written by researchers affiliated with Saudi universities. This fact encouraged us to consider when Saudi universities were established. According to the Saudi Ministry of Education, of the 65 existing public and private Saudi universities, 42 (64.6%) were established during or after 2004. Similarly, there was a sharp increase in the number of faculty members at Saudi universities between the year 2000 (n = 20,681 faculty members) to the year 2008 (n = 41,589), representing an increase of more than 100%. Increases in the number of Saudi universities and the number of faculty members might account for this increase in the quantity of special education journal publications, with researchers affiliated with Saudi universities having produced the majority of the reviewed publications.

A second interesting result is related to the research methodologies used in the published studies. Both Alhano's (2015) review of publications in Arabic and Altamimi's (2016) review of publications in English found that the

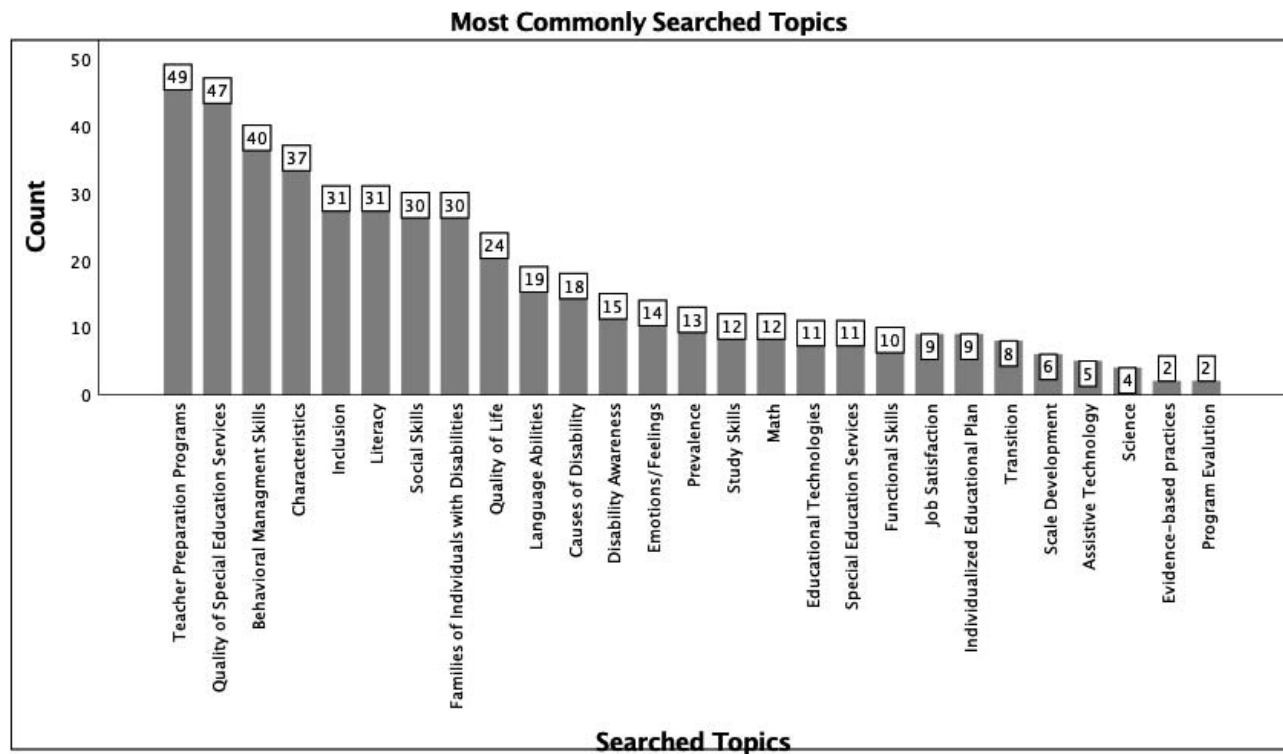


Figure 2: Searched Topics Across the 499 Coded Studies.

majority of special education journal publications used quantitative designs. However, by studying the different types of quantitative methods applied and whether those methods included the use of interventions, this study found that the majority (51%) of publications reported results from survey studies, which do not incorporate any intervention or experimentation of practices. A large body of international special education research supports the application of interventions across various content areas (e.g., social behaviors, academic skills, functional performance) and with students who have different types of disabilities (e.g., learning disabilities, intellectual disabilities, autism) to study effective ways to improve special education services and resulting in more positive outcomes for individuals with disabilities (Courtade et al., 2010; Goh & Bambara, 2013; Browder et al., 2013; McConnell, 2002; McDonnell et al., 2006; Swanson & Hoskyn, 1998). Therefore, it is worrisome that the majority of special education research in Saudi Arabia consists only of surveys. This finding is of major interest to the field of special education in Saudi and should be taken into consideration by families, researchers, policymakers, and stakeholders in order to increase research on evidence-based practices. The quality of special education services provided, as well as the short- and long-term outcomes achieved by students with disabilities, depends heavily on the use of evidence-based instructional practices by teachers and other education team members. When service providers are deprived of research on specialized knowledge and skills, they can rely only on practices with which they have experience,

regardless of whether those practices are effective and relevant for meeting the learning needs of students with disabilities. This reality can only lead to inadequate instruction for students with disabilities, poor post-school outcomes, and the waste of valuable teaching opportunities. Therefore, the field should take steps toward conducting more research related to the quality of special education services, the use of currently recognized evidence-based instructional practices, and post-school outcomes achieved by students with disabilities.

Besides the publication trend and study designs, the findings indicate that individuals related to special education, including students with disabilities, parents, and teachers, are served disproportionately with special education research. The majority of the reviewed studies addressed individuals with disabilities (54.5%), as well as special and general education teachers (19%). At the same time, however, only 4.2% of the reviewed studies included administrators, special education supervisors, or student teachers. This is unfortunate, considering the vital role those individuals play in ensuring the quality of special education services. It is this broader collective of individuals and professionals from both inside and outside the classroom setting that determine the quality of the special education services and student outcomes. Therefore, more involvement of this broader collective of individuals and professionals is needed in special education research.

The noticed disproportionate representation in special education research is not limited to the type of participants;

it also is apparent in relation to the disability categories represented by the students engaged in the study. For example, learning disabilities were represented in 20% of the publications, intellectual disabilities in 15% of the publications, deaf/hard of hearing in more than 16% of the publications. In contrast, speech/language impairments, emotional and behavioral disorders, multiple disabilities, and physical disabilities collectively were represented in only 3.2% of the publications. Although reasons for this disproportionality in representation was not addressed in this study, this finding should be alarming and encourage future studies that might uncover potential reasons. Scientific research is the tool for ensuring that service providers are delivering special education services that are both relevant and effective. In fact, the lack of research related to services for students with different types of disabilities should be considered a serious threat to understanding and improving the quality of special education services. When special education service providers are deprived of scientific knowledge necessary for the provision of effective and relevant special education services, students with disabilities might endure severe long-term consequences that lower their opportunities to lead productive, valued, and independent lives.

Similar remarks can be made concerning the settings in which these studies were conducted. The majority of the reviewed studies were conducted in educational settings such as the general classroom, self-contained special education classrooms, and university classes (40%); however, non-educational settings, such as home, work, social media platforms, and transportation systems were addressed in only 4% of the reviewed studies. The needs of individuals with special needs are not only school-related. It is equally important to provide effective and relevant instruction in skills that are required in life but are not reflected in the academic subject curricula (e.g., embedded essential skills such as personal care, communication, social interactions, and mobility, across contexts). Each of these skills are critical as students with disabilities are expected to be contributing and valued members of society by reaching the social and economic benchmarks set by their communities. Special education research should consider other non-educational settings for ensuring that individuals with special needs have opportunities to develop skills that prepare them for lives that are productive, valued, and satisfying.

Finally, the quality and use of research findings is limited when a study fails to report the characteristics of a study setting or its participants. For the findings of any study to be useful and reliable, it should provide ample description of the participants and the settings in which the study was conducted. Other types of details also are necessary for determining whether the findings in quantitative studies are generalizable, or whether findings in qualitative studies are relevant beyond the study itself.

Unfortunately, some of the reviewed studies failed to address such issues, weakening the impact they might have been able to make in the field of special education in Saudi Arabia, as well as internationally. Among the reviewed studies, more than 9% did not specify the disability with which their participants had been identified, using generic special education terminology instead. Further, 30.9% of the reviewed studies failed to report the grade level of their participants. It is difficult to interpret the results of studies that lack such necessary information.

LIMITATIONS AND FUTURE RESEARCH

Although the current study extends the literature by examining the published research on special education concerning Saudi Arabia's context that was written in Arabic and English, and published between 1984 and 2016, some limitations should be considered. First, the present study is limited to research studies in peer-reviewed journals; thus, it excluded other informational sources, including, but not limited to, books, book chapters, theses, and dissertations. There has been a massive number of theses and dissertations published by Saudi graduate students over the last decade; if those documents were considered, the researchers might have arrived at different conclusions. However, further research is needed to uncover the patterns of research across these publications, leading to more effective and impactful research.

Second, although the researchers conducted a comprehensive search of the existing special education literature, some of the published studies were not available online; this was the case specifically for studies published in print prior to the existence of online databases. Future research might consider including such publications in any future review. Further, despite the systematic review to identify peer-reviewed studies that met our inclusion criteria, the researchers assume that some qualified studies might have been missed for other reasons, such as improper storage in the researched online databases. Therefore, in addition to considering online databases, future studies should consider journals without online access, to include publications that do not appear in online databases.

Third, this review focused on a limited set of variables that included language, research design, use of intervention, participant characteristics (e.g., gender, disability category, educational placement, and grade level), research topics, and researchers' affiliations. Other important aspects of special education research that were not considered in this review include patterns of research within each disability category, the trend of research topics across the span of Saudi special education research, or the impact of funding sources on the number of publications across disability categories, to name just a few. Finally, this review of the types of topics searched in the 499 reviewed studies only indicates that certain topics are more frequently

researched than others. However, the field would also benefit from studies that look into the effectiveness of specific interventions for students with disabilities, the quality of special education services for students with disabilities, and outcomes of special education services for adults with disabilities.

LAST WORD

Special education is relatively new in Saudi Arabia, and special education research is still emerging. Therefore, research that investigates patterns of special education research and reports findings that help shed light on where the field is heading and how it should proceed is critical. The data collected from this study are enlightening and will be used to address other aspects of special education in Saudi Arabia that are beyond the scope of this study. However, the findings are useful in suggesting directions for future research to promote the further development of effective special education services in Saudi Arabia. This closing section provides some suggestions for Saudi special education researchers and stakeholders to help advance the field of special education research.

We believe that the adopted categorical approach for training teachers and delivering special education services has negative consequences on the field overall, as well as the long-term outcomes for students with disabilities. We noted that only the disability categories that are served by teacher preparation programs (TPPs) were represented in the majority of the studies found, as well as the studies of evidence-based practices. Disability categories such as speech-language impairment, ADHD, emotional and behavioral disabilities, multiple disabilities, and physical disabilities, which are not addressed by any of the TPPs, were barely represented in the reviewed publications. When acknowledging the fact that most of the peer-reviewed special education research publications in Saudi Arabia are authored by university professors, it becomes clear how the categorical approach is not only shaping which students with disabilities receive special education services, but also which categorical areas are researched.

Therefore, we suggest that a new approach for TPPs and service delivery is necessary. We believe that the country should adopt inclusive education as its new overarching philosophy for meeting the needs of students with every type of disability profile in our educational system. We recognize that this change will require amending current policies and legislation that govern special education in Saudi Arabia, which enshrine the categorical approach. This would lead to more changes related to special education TPPs, all of which are university-based. We assume that if the TPPs accept the foundational philosophy of inclusive education for preparing all teachers, eventually those teachers will become more capable of serving and advocating for students with

different disability profiles, which will expand the provision of special education services, decreasing the current gaps that exist for students with some disability profiles. Furthermore, we believe this expansion of service would address the current disproportionate representation of students across disability profiles in the research literature, as researchers become more oriented towards studying the quality of special education services for all students with special needs. This would be evident in a greater breadth and depth of research on special education in Saudi Arabia.

In addition, it is worrisome that the majority (69.5%) of the 499 reviewed studies used descriptive or correlational analyses only, while only around one fourth (27.6%) involved developing evidence-based practices. These findings, along with the fact that qualitative and mixed method designs are barely used in the extant research, might lead to questioning the quality of the special education services in Saudi Arabia. Since different experimental designs are useful in addressing different research questions, and the needs of individuals with disabilities are multifaceted, we argue that research using various designs should be evident in the research on special education.

Of course, we understand that having access to evidence-based practices and service providers' commitment and willingness to utilize these practices are not synonymous; however, developing and providing access to information on evidence-based practices is essential to achieving positive outcomes for individuals with disabilities, especially given documentation of Saudi practitioners being characterized with a lack of knowledge about and consideration of evidence-based practices (Alqaryouti et al., 2016). It is our hope that the findings from this study will increase the awareness about the current context and how we might advance the field of special education in Saudi Arabia. Saudi TPPs and special education researchers have a joint responsibility to empower teachers with the knowledge, skills, and infrastructure to utilize evidence-based practices. These efforts must include more investment into building the base of this critical body of research.

Finally, it is our hope that the Saudi Ministry of Education, with its supervisory and legislative authority over the Saudi universities, is able to direct more funding that supports TPPs in achieving that goal with our current and future teachers. The importance of using evidence-based practices cannot be overstated for producing better learning outcomes for students with disabilities; therefore, the investment into the identification and use of evidence-based practices by all teachers is an investment in the quality of Saudi Arabia's special education services and the future impact on all Saudis.

CONCLUSION

This study aimed to conduct a comprehensive review of the published Saudi special education research in peer-

reviewed journals. This synthesis provides information on the trends and characteristics of this literature, including languages of publication, research methodologies, participants, settings, use of interventions, and researchers' types of affiliations. The outcomes of this study could assist Saudi researchers and stakeholders when reflecting on research in the field of special education and making decisions for advancing the field and ensuring effective special education services for students with disabilities.

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