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AWARENESS OF EDUCATION WORKERS ABOUT DOWN SYNDROME

SVIJEST PROSVJETNIH RADNIKA O DOWNOVOM SINDROMU

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ABSTRACT

Inclusive education of children with Down syndrome is the ubiquitous form of education in the world, and educators are expected to be sufficiently informed about the general characteristics of these children to meet their needs in a regular class. The research aims to examine the information level of educators about Down syndrome. The sub-goals are to determine differences in the general information level of educators[2] about Down syndrome concerning socio-demographic variables (age, gender, length of service, experience working with children with disabilities, occupation). The sample was convenient and consisted of 100 educators who gave informed consent to participate in the research. The information level about Down syndrome was examined by a survey compiled for research purposes. Due to the unevenness of the subsample concerning the socio-demographic variables Mann-Whitney U test and Kruskal Wallis H test were used to process the obtained data. The results showed that educators are well informed about Down syndrome. There are no differences concerning gender, occupation (kindergarten teachers/ elementary school teachers), length of service, and experience in working with children with disabilities. Differences were found concerning age, and educators of the youngest age group (from 20 to 30 years old) are the best informed about Down syndrome. The results should be analyzed concerning the limitations of the research related to the sample and the survey, and therefore there is a need to repeat it in the future.

Keywords: knowledge, Down syndrome, kindergarten teachers, elementary school teachers

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[2] The term “educators” will be used in the paper because the sample included kindergarten teachers and teachers from regular elementary schools.

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SAŽETAK

Inkluzivni odgoj i obrazovanje djece s Down sindromom je u svijetu sveprisutniji oblik odgoja i obrazovanja i od prosvjetnih radnika se očekuje da su dovoljno informirani o općim karakteristikama ove djece kako bi mogli zadovoljiti njihove potrebe u redovnom razredu. Cilj istraživanja je ispitati razinu informiranosti prosvjetnih radnika o Down sindromu. Podciljevi istraživanja su ispitati da li postoje razlike u razini opće informiranost prosvjetnih radnika o Down sindromu u odnosu na socio-demografske varijable (dob, spol, radni staž, iskustvo u radu s djecom s teškoćama u razvoju, zanimanje). Uzorak je prigodni i činilo ga je 100 prosvjetnih radnika koji su dali informirani pristanak za sudjelovanje u istraživanju. Razina informiranosti o Down sindormu ispitana je anketom sastavljenom za potrebe istraživanja. Zbog neujednačenosti subuzoraka u odnosu na socio-demografske varijable za obradu dobijenih podataka korištena je neparametrijska statistika (Mann-Whitney U test i Kruskal Wallis H test). Rezultati su pokazali da su prosvjetni radnici izvrsno informirani o Down sindormu. Razlike ne postoje u odnosu na spol, zanimanje (odgojitelj/nastavnik), radni staž i iskustvo u radu s djecom s teškoćama u razvoju. Razlike su utvrđene u odnosu na dob gdje se pokazalo da prosvjetni radnici najmlađe dobne grupe (od 20 do 30 godina) su najbolje informirani o Down sindromu. Rezultate treba sagledati u odnosu na ograničenja istraživanja vezana za uzorak i anketu, te stoga postoji potreba u budućnosti ponoviti istraživanje.

Ključne riječi: znanje, Down sindrom, odgojitelji, nastavnici

INTRODUCTION

Inclusive education, as one of the crucial reforms of the education system, has increased the number of children with developmental disabilities in regular classes. The presence of children with disabilities in regular classes is a new challenge for teachers, so teachers today must possess knowledge and competencies they did not need before. It is considered that teachers are a crucial factor in the implementation of inclusive reform in schools, and their attitudes (de Boer et al., 2011; Koliqi and Zabeli, 2022) and positive and realistic expectations regarding children with disabilities (Gilmore, Campbell, and Cuskelly, 2003) are relevant factors. However, a factor that should also be considered is information or knowledge about the characteristics of children with disabilities (Gilmore et al., 2003). Research shows a correlation between teachers' knowledge of the characteristics of children with disabilities and their attitudes toward inclusion (Thomas and Uthaman, 2019).

In research, teacher awareness is highlighted as an essential factor when it comes to children with learning disabilities because teachers are usually the first educators with whom a child with learning disabilities comes into contact and maybe the first to recognize and spot potential signs of learning disabilities and suggest some form of treatment (Kocsis, 2016; Madhamani and Joseph, 2021). Due to the above, it is not surprising that a significant amount of research has focused on examining the teachers' knowledge level about children with learning disabilities (Al Khatib, 2007; Alahmadi and El Keshky, 2019; Arifa and Siraj, 2019; Jolly and Chacko, 2021; Kamala and Ramganesh, 2013; Madhamani and Joseph, 2021; Malliga, 2020; Rani and Reddy, 2021; Rudiyati, Pujaningsih, and Mumpuniarti, 2017; Sawhney and Bansal, 2014; Shari and Vranda, 2021; Shukla and Agrawal, 2015; Singh,

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2007; Thomas and Uthaman, 2019). In most of the mentioned studies, teachers show an average knowledge level about children with learning disabilities (Al Khatib, 2007; Alahmadi and El Keshky, 2019; Arifa and Siraj, 2019; Jolly and Chacko, 2021; Kamala and Ramganesh, 2013; Madhamani and Joseph, 2021; Rani and Reddy, 2021; Shari and Vranda, 2021; Thomas and Uthaman, 2019). However, several studies have found that teachers demonstrate inadequate knowledge (Malliga, 2020; Sawhney and Bansal, 2014; Shukla and Agrawal, 2015; Singh, 2007) and that they do not differentiate between children with learning disabilities and children with intellectual disabilities (Rudiyati, Pujaningsih, and Mumpuniarti, 2017). Research shows that teachers' awareness of learning difficulties varies in individual domains. Shari and Vranda (2015) find that teachers demonstrate adequate knowledge about the concept of learning disabilities and their definition and average knowledge about identification, treatment, and outcomes, but know very little about incidence and prevalence, causes and classification, and Kocsis (2016) determines that the one more area of weaker knowledge of teachers are risk factors that can lead to difficulties in learning.

Most of the mentioned research analyzes the influence of socio-demographic variables on teachers' information levels, and the results are inconsistent. In some studies, gender is related to the teachers' knowledge level (Madhamani and Joseph, 2021), and female teachers are more informed (Al Khatib, 2007; Shari and Vranda, 2021), while Alahmadi and El Keshky (2019) find that male teachers are better informed then female. Also, some studies show that gender did not affect teachers' knowledge about children with learning disabilities (Arifa and Siraj, 2019; Kamala and Ramganesh, 2013). Research agrees about the influence of age, and there are no differences in the information level among teachers concerning age (Al Khatib, 2007, Alahmadi and El Keshky, 2019; Arifa and Siraj, 2019). Work experience in most research is not a significant factor affecting the level of information about children with learning disabilities (Al Khatib, 2007; Alahmadi and El Keshky, 2019; Arifa and Siraj, 2019; Jolly and Chacko, 2021; Kamala and Ramganesh, 2013). However, Madhamani and Joseph (2021) find a correlation between work experience and teacher knowledge, while Shari and Vranda (2015) find that teachers with 20 or more years of work experience have the best awareness of clinical manifestations of learning disabilities. Teacher qualifications are also a factor for which research shows inconsistent results, so in some, it is established that there is a connection between qualifications and teacher knowledge (Al Khatib, 2007; Madhamani and Joseph, 2021) and that teachers with a bachelor's degree have a better awareness of the concept and definition, causes and classification of learning disabilities (Shari and Vranda, 2015), while in others no differences are found (Alahmadi and El Keshky, 2019; Arifa and Siraj, 2019). In the research, there is inconsistency concerning other variables such as marital status and type of school. Alahmadi and El Keshky (2019) find that marital status affects teachers' knowledge, while Arifa and Siraj (2019) does not. Jolly and Chacko (2021) find that the type of school (public/private) does not affect the level of knowledge of teachers, while Alahmadi and El Keshky (2019) find that it does and that teachers from public schools have a higher level of awareness. Teacher knowledge is also affected by the support they get (Alahmadi and El Keshky, 2019), and teachers without it are better informed than teachers with support (Shari and Vranda, 2015).

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It has been shown that the teachers' knowledge is also influenced by the level of primary education (Alahmadi and El Keshky, 2019), and teachers from higher grades of primary school have better awareness than teachers from lower classes of primary school (Shari and Vranda, 2015).

In addition to research on the teachers' information level about children with learning disabilities, research on the teacher's knowledge about other categories of children who need support in the regular class is also essential, but there is only a few such research. Barrio et al. (2018) examined teachers' self-assessment of knowledge about a total of 13 categories of children (11 disabilities categories, a category of mental illnesses, and a category they called "struggling learners"). The teacher was supposed to assess his/her level of knowledge about each of the 13 children categories with grades from 1 to 3, where grade 1 showed a poor level of knowledge, grade 2 a satisfactory level, and grade 3 an excellent. It is important to emphasize that teachers did not have an average score of 3 for any category of children. They estimated that they had satisfactory knowledge about learning difficulties, struggling learners, speech-language disorders, ADHD, and intellectual disabilities, while they had poor one about autism, blindness, cerebral palsy, deafness, mental illness, and traumatic brain damage. Research shows that teachers have limited knowledge about children with special educational needs (Gyasi, Okrah, and Anku, 2020) or limited knowledge about how to treat and teach this population in the regular classroom (Mensah, Gyamfi, and Agbezudor, 2022).

The focus of this paper is the examination of the information level of educational workers about Down syndrome, and the analysis of previous research has shown that very little research has dealt with this issue. Gilmore, Campbell, and Cuskelly (2003) examined the knowledge level of people in the general population and teachers about Down syndrome and found that both groups showed fairly accurate knowledge but showed positive stereotypes about people with Down syndrome and described them as affectionate and happy. Krause (2020) finds that teachers show a moderate degree of confidence in their knowledge about Down syndrome and that knowledge about Down syndrome is not a significant predictor of teachers' attitudes towards the inclusion of children with Down syndrome. Petty and Sadler (1996) found that most of the teachers in their sample had received little or no information during their studies about children with disabilities in general or children with Down syndrome, and most of the teachers had received information from their reading of the literature.

Based on the presented research review, it was determined that there is a lack of research regarding the educator's knowledge level about some categories of children with disabilities, especially children with Down syndrome. It is also interesting that in our country and region, not a single research was found that examined the information level of educational workers about any category of children who can be found in a regular class and need a specific approach to learning. Due to all of the above, the main goal is to examine the infomration level of educators about Down syndrome. The sub-goals of the research are to examine differences in the educator's general information level about Down syndrome concerning socio-demographic variables such as age, gender, length of service, experience working with children with disabilities, occupation. Based on the results of the mentioned research, certain presumptions were made. It is expected that educators are not sufficiently informed about Down syndrome.

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It is expected that the highest level of information about Down syndrome will be shown by educators that are the youngest; females; with shorter working experience; previous experience in working with children with disabilities, and educators in preschool institutions.

MATERIAL AND METHODS

Participants

A total of 100 educators participated in the research. It is a convenience sample formed by teachers from three elementary schools in Jajace (Primary School "13. Rujan" Jajce, Primary School "Jajce" Kruščica/Jajce, Primary School "Braća Jezerčić" Divičani/Jajce) and kindergarten teachers from the Public Preschool Institution "Bare" Jajce. The structure of the sample concerning gender shows that there is a predominance of females (N = 76) compared to males (N = 24) and is not uniform concerning gender (χ^2 = 27.040, p = 0.000). Concerning age, the subgroup of 31 to 40 years old (N = 38) is the most numerous, the group from 20 to 30 years old (N = 32), then the group from 41 to 50 years old (N = 16), and there are the fewest respondents aged 51 and over (N = 14). The results of the chi-square test showed that it is statistically significant (χ^2 = 16.800, p = 0.001) and that the distribution of the sample is not uniform concerning age. Concerning work experience, the largest number of respondents have work experience of up to 10 years (N = 48), followed by respondents with work experience of 11 to 20 years (N = 32), then with work experience of 21 to 30 years (N = 12) and the least number of respondents with work experience of 31 and more years (N = 12). The sample is not uniform concerning the length of service, which is confirmed by the results of the chi-square test, which are statistically significant (χ^2 = 41.440, p = 0.000). Only 19 respondents have experience working with students with disabilities, while 81 respondents did not have the opportunity to work with students with disabilities. The chi-square test (χ^2 = 38.440, p = 0.000) is statistically significant and shows that the sample is not uniform concerning the experience of working with students with disabilities. There are more elementary school teachers (N = 70) than kindergarten teachers (N = 30) in the sample, and the results of the chi-square test, which are statistically significant, confirm the unevenness (χ^2 = 16.000, p = 0.000).

Design and Procedures

The research takes place in Jajce during 2018 and 2019. The consent of the Ministry of Education, Science, Culture and Sports, SBK Travnik, was obtained. Educators were given all relevant information about the research (the purpose, anonymity, the use of data only for research purposes, the possibility of withdrawing from participation at any stage, and the way to fill out the survey). Only educators who gave informed consent for participation were included in the research.

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Measures

The educator's information level was examined by a survey designed for research. The research of Klisović (2016) served as ideas for some of the questions. The survey consisted of 9 questions about Down syndrome, and the questions and correct answers were: What is Down syndrome? (a genetic disorder); Can Down syndrome be cured? (no); Where should people with Down syndrome live? (in the family - community); Can people with Down syndrome be independent (with minimal supervision)? (yes); People with Down syndrome can learn to ... (they can learn everything offered – cook, read, count, but they need a longer learning period and the knowledge is at an elementary level); Do mothers over 35 have an increased risk of giving birth to a child with Down syndrome? (yes); Can people with Down syndrome have a job? (yes); The basic characteristics of people with Down syndrome are: ... (slanting eyes, large protruding tongue, wide short hands), and Can people with Down syndrome start a family? (yes). Several answers were offered, and the respondent could choose one they considered correct. Each correct answer is scored with 1 point, and the maximum is 9 points. Respondents who are excellently informed can have 6 to 9 scores, sufficiently 5 points, and insufficiently informed 0 to 4 points.

Statistical Analysis

Non-parametric statistics were used to examine the differences, given that the research sample is not uniform concerning socio-demographic variables. The Mann-Whitney U test was used to test differences in the infomration level of educators concerning gender, profession, and experience in working with children with disabilities, and the Kruskal Wallis H test was used to test differences concerning age and length of service.

RESULTS AND DISCUSSION

Table 1 presents the results of the educator's information level about Down syndrome.

Table 1. Results of the educator's information level about Down syndrome

Information lavel	**N**	**%**
Excellently informed	86	86.0
Sufficiently informed	4	4.0
Insufficiently informed	10	10.0
Total	100	100.0

The results presented in Table 1 show that 86.0% of respondents are excellently informed, 4% sufficiently, and 10.0% insufficiently informed. Results are also confirmed by the descriptive statistics of the summary variable, where educators achieve an average score of AS = 7.23 (SD = 2.42), which shows that they are well informed about Down syndrome. It was expected that educators would not be sufficiently informed, which the obtained results did not confirm.

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It is possible that on results influenced the fact that the survey contained only nine questions of a general nature. In future research, a more extensive questionnaire should be used, which, in addition to general questions, will also contain more specific questions regarding Down syndrome and the support these children need in the regular classroom. Also, an important variable that could affect the educator's information level is how they are informed about Down syndrome (during studies, through education, self-initiated, etc.), which was not taken into account in this research and should be included in future research.

The results are difficult to compare with other research because few studies have examined the educator's information level about Down syndrome. To determine predictors of teachers' attitudes towards the inclusion of children with Down syndrome Krause (2020) included the variable self-assessment of knowledge about Down syndrome. Teachers showed a moderate degree of confidence in their knowledge, and self-assessment of knowledge about Down syndrome was not a predictor of teachers' attitudes towards the inclusion of children with Down syndrome. In Krause's (2020) study level of knowledge was not examined, and because of that comparing the results is impossible. Gilmore and colleagues (2003) compared teachers' and the general population's knowledge levels about Down syndrome. Teachers showed more accurate general knowledge about Down syndrome than the general population. The fact that only two studies were found that assess educators' knowledge about Down syndrome shows that this topic was not sufficiently researched. Educators cannot provide adequate support to children with Down syndrome if they do not know their general and specific characteristics. Also, there is a need to determine how much their information level about Down syndrome affects their attitudes about the inclusion of this population in regular classes.

Knowing the information level of educators about Down syndrome is an important indicator of the need for additional education about Down syndrome. Although the results showed that teachers are well informed about general issues related to Down syndrome, the results should be taken with caution. As mentioned, the survey had only nine questions and dealt with universal facts about Down syndrome but not specific ones essential for including and working with children with Down syndrome in the classroom. Therefore, there is a need for further examination and improvement of educators' information level. Research shows that the information level about Down syndrome can be improved through experiential teaching (Campbell, Gilmore, and Cuskelly, 2003). The authors examined the knowledge level about Down syndrome, opinions about inclusive education, and the attitudes towards disability in general among 274 students (future teachers) at the beginning and the end of the semester. Wishart and Manning's (1996) questionnaire was used for the assessment of student's knowledge levels. The questionnaire assesses knowledge about Down syndrome and attitudes toward inclusive education of children with Down syndrome. During the semester, the students had 1 hour of lectures and 2 hours of practical classes on human development in general, and the classes focused on individual differences and inclusive education without special emphasis on Down syndrome. Also, the students were given the task to assess two people from the general population with Wishart and Manning (1996) questionnaire, and they were instructed to use the studies of Wishart (1998) and Wishart and Manning (1996) to compare with their results. At the end of the semester, students did both questionnaires again.

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The results showed that students, at the end of the semester, gained more accurate knowledge about Down syndrome and that their attitudes towards disability in general changed. For example, at the beginning of the semester, 80.6% of students could identify that Down syndrome is primarily a chromosomal disorder, while at the end of the semester, 97.4% of students could. The research has shown that knowledge about Down syndrome can be improved through experiential and directed learning and that raising awareness about a specific disability can also lead to a change in attitudes towards disability in general.
Table 2 presents the differences in the educator's information level about Down syndrome concerning gender, profession, and experience working with children with disabilities.

Table 2. Differences in the educator's information level about Down syndrome concernig gender, profession, and experience working with children with disabilities

		N	Mean Rank	Sum of Ranks	Mann-Whitney U	p
Gender	Male	24	43.92	1054.00	754.000	0.185
	Female	76	52.58	3996.00		
Profession	Elementary schools teachers	70	48.96	3427.00	942.000	0.399
	Kindergarten teachers	30	54.10	1623.00		
Experience	Yes	19	43.21	821.00	631.000	0.206
	No	81	52.21	4229.00		

The results presented in Table 2 show that female teachers have a higher mean rank (MR = 52.58) than male teachers (MR = 43.92), but the results of the Mann-Whitney U test show that this difference is not statistically significant (U = 754.000, p = 0.185). It was expected that female teachers would show a higher level of information because several studies on the information level about disabilities generally showed that female teachers are better informed (Al Khatib, 2007; Shari and Vranda, 2021; Menon, 2016). When it comes to profession, kindergarten teachers show a higher mean rank (MR = 54.10) than teachers (MR = 48.96), but the observed difference is not statistically significant (U = 942.000, p = 0.399). It was expected that kindergarten teachers would have a more positive attitude because research shows that they show a more positive attitude towards the inclusion of children with Down syndrome compared to primary school teachers (Gilmore et al., 2003). The results in Table 2 show that educators who have no experience in working with children with disabilities achieve a slightly higher mean rank (MR = 52.21) than educators who have experience (MR = 43.21), but the difference is not statistically significant (U = 631.000, p = 0.206). Although the difference is not statistically significant, the result is unexpected. The fact that educators without work experience with children with disabilities are somewhat better informed raises the question of what kind of experience educators have. Experience must be positive (Galović, Brojčin, and Glumbić, 2014; Vlachou, 1993) because only a positive experience will be an incentive to acquire further knowledge about this population and lead to positive attitudes towards the inclusion of these children in regular schools. Considering that teachers with no experience have a slightly higher mean rank, the question is what kind of experience the educators in this sample have.

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Because of these results, there is a need for depth analyses of educators' experiences in working with children with disabilities in the sense of what kind of experience they have (positive or negative), with which population of children with disabilities, etc., and then assess the impact of this variable on the educator's information level.

Table 3 presents the differences in the educators level of information about Down syndrome concerning age and length of service.

Table 3. Differences in the educators level of information about Down syndrome concerning age and length of service

		N	Mean Rank	Kruskal-Wallis H	p
Age	20 - 30	32	62.13	10.855	0.013
	31 - 40	38	43.00		
	41 - 50	16	54.75		
	51 and more	14	39.43		
Lenght of service	0 - 10	48	55.98	6.165	0.104
	11 - 20	32	44.16		
	21 - 30	12	55.46		
	31 and more	8	35.56		

The results presented in Table 3 show statistically significant differences in the educator's information level concerning age (U = 10.855, p = 0.013), and the youngest group (20 to 30 years) have the highest mean rank (MR = 62.13). The results are expected because modern technologies are more accessible to younger educators. Also, they completed their studies when inclusive education was a generally accepted social philosophy, so it is assumed that they received information about children with disabilities during their faculty education. There is a need for a detailed analysis of how educators are informed about people with disabilities in general and also about Down syndrome (whether the knowledge was acquired during studies, through modern technologies, or self-education) to confirm this. Confirmation for further detailed analysis is also the results S. Saravanabhavan and Rc. Saravanabhavan (2010). The authors compared three groups: teachers from regular schools, special schools, and students in their final years of teacher studies, regarding the knowledge level about children with disabilities. The results showed that students of teachers' colleges have the worst knowledge level. In this case, younger respondents who are still studying have poorer knowledge. Although inclusive education is a generally accepted social philosophy, it does not mean it is represented in future teacher education programs. Also, the fact that modern technologies are available to younger generations does not mean they use them a priori to acquire new knowledge and information. Because of all the above, there is a need to analyze the level of information about Down syndrome among students of teacher studies. When it comes to differences in the educator's information level concerning the length of services, the results show that there are no statistically significant differences (U = 6.165, p = 0.104), but the highest mean rank has educators with the least length of services (MR = 55.98).

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It was expected that the group of educators with the least length of service would be the best informed because they belong to the generation of younger educators who were assumed to be better informed, but the difference is not statistically significant, so the expectation was not confirmed.

The research results should be analyzed concerning the limitations which could have influenced the results. The first limitation is related to the sample because it is a convenience sample that includes educators from the municipality of Jajce, and the sample structure is uneven concerning the observed socio-demographic variables. Another limitation is related to the questionnaire that assessed the level of information because it was constructed for the needs of this research and contained only nine questions. There is a need to repeat the study with the overcoming of the limitations.

CONCLUSION

The educator's awareness of Down syndrome is one of the important indicators of their readiness to accept and work with children with Down syndrome. The results of this research are not in line with expectations because it was shown that educators are well informed about Down syndrome, that there are no differences in the information level about Down syndrome concerning gender, profession (kindergarten teachers/elementary school teachers), experience in working with children with disabilities and length of services. Results were confirmed only for age, and educators of the youngest age show the highest level of informedness. As the method of informing about Down syndrome was not verified in this research, there is a need for a more detailed analysis of what influenced younger educators to be better informed. This research is the first one of this type in Bosnia and Herzegovina and can serve as an idea and incentive for new research on this issue in our country, but future research should try to remove the limitations observed in this research. There is a need to repeat the study on a larger sample of educators, more uniform concerning socio-demographic variables, and use a survey with a larger number of questions that will refer to general and specific knowledge about Down syndrome.

REFERENCES

1. Al Khatib, J. M. (2007). A survey of general education teachers' knowledge of learning disabilities in Jordan. *International Journal of Special Education*, 22(1), 72-76.
2. Alahmadi, N. A., & El Keshky, M. E. S. (2019). Assessing Primary School Teachers's Knowledge of Specific Learning Disabilities in the Kingdom of Saudi Arabia. *Journal of Educational and Developmental Psychology*, *9*(1), 9-22. http://doi.org/10.5539/jedp.v9n1p9
3. Arifa, S., & Siraj, S. S. (2019). A descriptive study to assess the knowledge and attitude of primary school teachers regarding learning disabilities among children in selected schools of district Pulwama Kashmir. *Journal of Paediatrics and Nursing Science*, *2*(1), 19-32.
4. Barrio, B. L., Miller, D., Ojeme, C., & Tamakloe, D. (2018). Teachers' and parents' knowledge about disabilities and inclusion in Nigeria. *Journal of International Special Needs Education*, *22*(1), 14-24. http://dx.doi.org/10.9782/17-00010

Research in Education and Rehabilitation 2023; 6(2): 154-165. **DOI**: 10.51558/2744-1555.2023.6.2.154

5. Campbell, J., Gilmore, L., & Cuskelly, M. (2003). Changing student teachers' attitudes towards disability and inclusion. *Journal of Intellectual and Developmental Disability, 28*(4), 369-379. https://doi.org/10.1080/13668250310001616407
6. de Boer, A., Pijl, S-J., & Minnaert, A. (2011. Regular primary schoolteachers' attitudes towards inclusive education: A review of the literature. *International Journal of Inclusive Education*, *15*(3), 331-353. https://doi.org/10.1080/13603110903030089
7. Gilmore, L., Campbell, J., & Cuskelly, M. (2003). Developmental expectations, personality stereotypes, and attitudes towards inclusive education: Community and teacher views of Down syndrome. *International Journal of Disability, Development and Education*, *50*(1), 65-76. https://doi.org/10.1080/1034912032000053340
8. Gyasi, M. N. K., Okrah, A. K., & Anku, J. S. A. (2020). Teachers' Knowledge of Special Educational Needs and Disability Students and Their Classroom Management Approaches. *World Journal of Education*, *10*(4), 160-172. https://doi.org/10.5430/wje.v10n4p160
9. Kamala, R., & Ramganesh, E. (2013). Knowledge of Specific Learning Disabilities among Teacher Educators in Puducherry, Union Territory in India. *International Review of Social Sciences and Humanities*, *6*(1), 168-175.
10. Kocsis, J. (2016). *Primary teachers' knowledge about learning disabilities* (Master Thesis). NIPISSING UNIVERSITY SCHULICH SCHOOL OF EDUCATION NORTH BAY, ONTARIO. https://tspace.library.utoronto.ca/bitstream/1807/92937/1/primary%20teacher s%20knowledge.pdf
11. Koliqi, D., & Zabeli, N. (2022). Variables affecting the attitudes of teachers' towards inclusive education in Kosovo. *Cogent Education*, 9(1), Article 2143629. https://doi.org/10. 1080/ 2331186X.2022.2143629
12. Krause, N. (2020). *Teachers' attitudes towards the inclusion of children with Down's syndrome within mainstream educational settings and the influencing variables* [Doctoral Thesis, Cardiff University School of Psychology]. ORCA. https://orca.cardiff.ac.uk/id/eprint/ 133929
13. Madhamani, A., & Joseph, A. (2021). Assessment of Knowledge and Awareness of Public School Teachers Towards Learning Disabilities in Children - An Institutional Based Cross-Sectional Study in Dharmapuri District, Tamil Nadu. *Journal of Family Medicine and Primary Care*, *10*(7), 2524-2528. https://doi.org/10.4103/jfmpc.jfmpc_1869_20
14. Malliga, T. (2020). Awareness of learning disabilities among primary school teachers. *International Journal of Educational Research*, *1*(1), 34-41.
15. Menon, K. P. S. (2016). Awareness on Learning Disabilities among Elementary School Teachers. *Asian Journal of Education and Training*, *2*(2), 78-83. https://doi.org/10.20448/journal.522/2016.2.2/522.2.78.83
16. Mensah, P. A., Gyamfi, A., & Agbezudor, T. (2022). The Teacher's Knowledge about Special Needs Learners: A Fundamental Element for the Implementation of Inclusive Education. *International Journal of Arts and Social Science*, 5(7), 1-10.
17. Petty, H., & Sadler, J. (1996). The integration of children with Down syndrome in mainstream schools: Teachers' knowledge, needs, attitudes and expectations. *Down Syndrome Research and Practice*, *4*(1), 15-24. https://doi.org/10.3104/reports.59

Research in Education and Rehabilitation 2023; 6(2): 154-165. **DOI**: 10.51558/2744-1555.2023.6.2.154

18. Rani, S. N, & Reddy, G. R. (2021). A study on awareness levels of primary school teachers on learning disabilities in government schools of Telangana. *The Pharma Innovation Journal*, *10*(3), 170-173.
19. Rosemary, J., & Chacko, C. M. (2021). Knowledge Regarding Learning Disability among Primary School Teachers. *International Journal of Indian Psychology*, *9*(2), 1153-1168. DOI: 10.25215/0902.122
20. Rudiyati, S., Pujaningsih, P., & Mumpuniarti, M. (2017). Teacher Knowledge and Experience Dealing with Students with Learning Disabilities in Inclusive Elementary School and Implications to Learning Accommodation and Modification. *Advances in Social Science, Education and Humanities Research (ASSEHR),* (66) Proceedings of the 1st Yogyakarta International Conference on Educational Management/Administration and Pedagogy (YICEMAP 2017), 272-278. https://doi.org/10.2991/yicemap-17.2017.47
21. Saravanabhavan, S., & Saravanabhavan, R.C. (2010). Knowledge of learning disability among pre- and in-service teachers in India. *International Journal of Special Education, 25*, 132-138.
22. Sawhney, N., & Bansal, S. (2014). Study of Awareness Of Learning Disabilities Amoong Elementary School Teachers (Conference paper). International Education Confer 'Education as a right across the levels: Challenges, Opportunities and Strategies' At: Jamia Milia Islamia, New Delhi. https://www.researchgate.net/publication/278029676_STUDY_OF_AWARENESS_OF_LEARNING_DISABILITIES_AMONG_ELEMENTARY_SCHOOL_TEACHERS/citations
23. Shari, M., & Vranda, M. N. (2015). Knowledge of Primary School Teachers in Identifying Children with Learning Disabilities. *Disability, CBR and Inclusive Development*, *26*(3), 68-76. https://doi.org/10.5463/dcid.v26i3.443
24. Shukla, P., & Agrawal, G. (2015). Awareness of Learning Disabilities among Teachers of Primary Schools. *Online Journal of Multidisciplinary Research (OJMR), 1*(1), 33-38.
25. Singh, D. K. (2007). General Education Teachers and Students with Physical Disabilities. *The International Journal of Learning*, *14*(7), 205-214.
26. Thomas, E. K., & Uthaman, S. P. (2019). Knowledge and Attitude of Primary School Teachers Towards Inclusive Education of Children with Specific Learning Disabilities. *Journal of Social Work Education and Practice*, *4*(2), 23-32. https://www.jswep.in/index.php/jswep/article/view/78