

Effects on Parental Mental Health after Diagnosis and Treatment of Developmental Dysplasia of the Hip (DDH)

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Authorship and Contribution Declaration

Each author of this article has encountered all 04 criterions of authorship:

1. Commencement and design of the study, attainment of data, or analysis and interpretation of information.
2. Drafting the manuscript or rewriting it censoriously for important intellectual content.
3. Providing concluding endorsement of the version for publication.
4. All authors have settled to be answerable for all aspects of their research work

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ABSTRACT

Objective: This study aimed to assess the psychological well-being of parents of children with Developmental Dysplasia of the Hip (DDH) and the impact of anxiety, depression, and mental health on families during and after treatment.

Methodology: Fifty parents from pediatric orthopedic clinics were included, focusing on those whose children were diagnosed with DDH within the past year and had no severe comorbidities. Psychological distress was measured using the General Health Questionnaire (GHQ-28), State-Trait Anxiety Inventory (STAI), and Beck Depression Inventory (BDI). Data were collected at diagnosis and six months into treatment. Statistical analyses, including paired sample t-tests and regression, were used to track changes and identify predictors.

Results: Parents experienced significant improvement in mental health during treatment. GHQ-28 scores decreased from 22.70 at diagnosis to 19.24 post-treatment, reflecting reduced psychological distress. State and trait anxiety (STAI) scores also declined significantly, from 23.34 to 19.60 and 21.66 to 18.62, respectively. BDI scores dropped from 14.28 to 11.20, indicating fewer depressive symptoms. Follow-up analyses confirmed significant improvement across all psychological measures, particularly in GHQ-28 and state anxiety. These changes were independent of socioeconomic status.

Conclusion: While the initial diagnosis and treatment of DDH elevate psychological distress among parents, mental health improves over time. This underscores the need for targeted psychological support and interventions for parents throughout their child's treatment journey.

Keywords: Developmental Dysplasia of the Hip (DDH), Parental Mental Health, Psychological Distress, Anxiety and Depression, Treatment Impact.

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INTRODUCTION

Developmental Dysplasia of the Hip (DDH) is a congenital disorder that develops in children, especially in the early years of development, as it is a type of hip joint development problem. This condition, which can lie in mild instability with the hip joint to complete dislocation, must be treated in a timely and efficient manner to avoid further complications that include osteoarthritis, hip deformity, or even loss of mobility. It is the standard management of/DDH, which depends on the severity and prescribed natural treatment of braces and casts,

but at times, the clients undergo surgical interventions (Gambling & Long, 2019). Although the literature on DDH, with its relationship to its clinical approaches, such as diagnosis, management, and prognosis, has received much attention, literature indicating the effect of such diagnosis on parents' mental health is emerging. The diagnosis and management of DDH is, therefore, a phase that may make parents experience a variety of psychological issues (Topak et al., 2022). From the time of the first diagnosis, parents experience various emotions such as sadness, fear, and uncertainty regarding the child's

future. The diagnosis of DDH, particularly when the child may not display signs that denote the condition, is a shocking and painful experience. The actions and choices that are unavoidable for the sake of these children put considerable pressure on the parents and duly affect their psychological well-being, too (Theunissen et al., 2022). Such feelings are connected with the necessity of check-ups and operations and the doubts that arise regarding the effectiveness of the treatments.

The author's assessment of the literature has informed the knowledge that parents of children with chronic illnesses or conditions have a higher level of psychological distress than parents of healthy children. Potential negative effects of chronic illness, the requirement to look after the kid's health, guesswork, and potential future consequences may cause greater anxiety, symptoms of depression, and adaptive pressure. Parenting children diagnosed with DDH can be a challenge, given the fact that the periods of treatment are long and that the levels of treatment differ (Wakely et al., 2021). This includes receiving routine medical check-ups from doctors, strictly following a tight medical schedule to use various remedies, and also enduring having to be subjected to surgeries, including hip surgeries if the ones diagnosed are candidates for such surgeries. Several papers have provided an account of the psychological effects of pediatric health conditions on parents; however, such papers focusing on DDH are few. Studies have included the overall effects of chronic illness on parental well-being, reporting that parents suffer from increased anxiety, depression, and stress (Sadeq & Al-Dujaili, 2023). Nevertheless, there are few studies that have focused on the problems that parents with children- sufferers of DDH encounter. Knowledge of mental health issues for these parents is important to the provision of appropriate interventions that will enable these parents to come to terms with bearing a child with a certain ailment. It is equally or perhaps even more debilitating to experience Dual Diagnosis Hepatitis (DDH) and, subsequently, the treatment process, which brings the following effects (Harry et al., 2022). This brings some specific concerns to the parents. For example, they may feel anxious about the impacts that the affliction can cause in the future on their child with DDH. This anxiety is aggravated by the fact that a person has to make decisions on treatment, which are never a picnic in the first place. Furthermore, the case or surgery itself can lead to increased anxiety as parents develop concerns about the procedures of surgery and the outcome (Abd

Elkhair et al., 2020). Other factors include the imposition of numerous visits to the health care facilities and the navigation of the child's condition and treatment.

However, the effect of DDH goes beyond the time of diagnosis and even the treatment process since it plays a significant role in the psychological development of the child. Parents may have various questions and are constantly stressed and worried about their child's progress and improvement. The possibilities of the long-term effects, like additional surgeries or the necessity of regular physical therapy, continue to fuel the state of worry and insecurity (Gibbard et al., 2021). Therefore, these needs may put parents under pressure in regard to their own mental health and well-being to adequately cater to the child. For these reasons, interventions directed at counteracting the negative psychological effects of DDH on parents are needed. First, parents' MH issues could be used to identify the appropriate actions for programming support services and interventions (Tao et al., 2023). As frontline caregivers, healthcare providers are responsible for identifying psychological indicators and connecting the parents to the relevant support mechanisms. This could mean providing psychological counseling, group meetings, or reading material to assist in correcting anxiety, among other things. Furthermore, comprehension of the psychological aspect of the disease will also contribute to the development of elaborate care plans that encompass the medical as well as psychological suffering of the families.

Many parents decide that the diagnosis and treatment of Developmental Dysplasia of the Hip (DDH) have serious effects on parental well-being. Besides the day-to-day burden of managing a child with a chronic illness, the concern about the therapeutic procedures that are required in the long run and the feeling of uncertainty regarding the outcome of the surgery also contribute to raising high levels of anxiety, depression, and increased psychological distress among parents as it is identified by Roposch et al. (2020). These descriptions form a good background for offering more elaborate information on these issues and emphasize the need to offer parents with mental health disorders a higher level of care on DDH. This study seeks to contribute towards the works already done by the scholars researching DDH through employing qualitative research methods whereby the social impact of DDH on parents and, consequently, the family's wellbeing is determined.

METHODOLOGY

This research aimed to establish the psychological effects of parenting a child with Developmental Dysplasia of the Hip (DDH); it is a condition that affects the hip joint in a child and, if left untreated, can be very painful to the child. The participants were fifty parents of children sampled from three intensive care specialized paediatric orthopaedic clinics that treat children with DDH using a purposive sampling technique. For this reason, the clinics were selected to enroll urban and suburban patients and to exclude patients in other aspects of the economic status and demographic settings (Sawamura et al., 2024). This diversity was done with the view of increasing the generality of the research findings of the study. The inclusion criteria, therefore, stated that the participant must be not less than eighteen years of age and a parent or the primary caregiver of a child who had been diagnosed with DDH in the past year. This would develop devastating short-term and long-term psychological side effects of the diagnosis and its treatment (Vatansever et al., 2022). It is more representative to obtain data concerning the DDH diagnosis only for the period preceding the survey, so the questionnaire was filled only by those mothers whose child was diagnosed with DDH more than one year ago. Thirdly, parent respondents who reported severe comorbidities of their children that could be directly linked with mental health were excluded in order to minimize the model's effect modification. It was useful in a manner that it ruled out any other factors that might cause an extra strain on the parents, therefore allowing the independent examination of how DDH affects the parents emotionally.

Psychologically, the parents with affected children underwent three standard psychological tests to assess them: the General Health Questionnaire (GHQ 28 items), State/Trait Anxiety Inventory (STAI), and Beck Depression Inventory (BDI). In the Self-Rated Health Questionnaire, the overall health check questions are as follows, including symptoms with the GHQ-28 from anxiety, depression, and social dysfunction. It has 28 items that use a four-point response format, and the higher scores signify higher psychological distress (Theunissen et al., 2023). The STAI measures state anxiety, which is given by a person at a particular time and under given circumstances, and trait anxiety, which is defined by how a person is generally inclined to be anxious. The present tool consists of two distinct scales, with twenty items to rate on a scale of four assessing the different anxiety levels

(Deurloo et al., 2019). The BDI centers solely on depressive symptoms; it comprises twenty-one items done on an ordinal scale of four. All the tools mentioned above provide a full psychological overview of parents with the child (ren) having DDH.

The data were collected in two waves because the aim of the present study was to investigate the temporal changes in mental health. The first was concerned with surveying the parents and child soon after the diagnosis of the child's DDH. The first data collection was designed to evaluate the first psychological response to the diagnosis in parents. The second phase started six months after the start of the treatment to determine how mental health would be after some duration of the treatment. Purposive sampling was used to identify participants who were required to complete the questionnaire during their child's medical appointment (Bozkurt et al., 2021). Participants' written consent was sought, and voluntary self-administered questionnaires were either paper-based at the clinics or web-based according to participants' preferences. To increase the response rates and reduce the dropout rates, the follow-up assessment was done by phone or email with occasional reminders to complete the survey's first and second phases.

The quantitative data was analyzed through SPSS version-27 by descriptive statistics to reveal the demographic profile of the participants: age, gender, SES, and treatment type, surgical or non-surgical. The statistics helped provide background about the sample and the mental health data collected. Paired sample t-tests were used to analyze the difference between pre-and post-treatment scores of GHQ-28, STAI, and BDI to measure the temporal variation in the psychological distress level. This statistical test proved useful in analyzing the changes in the treatment process that have influenced mental health. Also, a multiple regression equation was employed to establish the correlation between treatment type and mental health status with several control variables, including the age of the child and length of treatment. Treatment type was also considered another independent variable and potential covariate to control in the regression model to compare the effect on mental health scores. The coefficients of internal consistency thus obtained for the scores achieved in the GHQ-28, STAI, and BDI were within the acceptable range per the norms set in the earlier studies. Reliability was established by performing Cronbach's alpha coefficient on the scales used. The acceptable value should be above 0.7. This made it possible to ensure the high internal validity of

the tools to capture the level of psychological distress in the respective sample populations and replicate the exact findings as measured by Sadeq and Al-Dujaili (2023). In order to obtain an accurate assessment of the results, the scores were again matched with the norm, which includes other previous research evidence, to ensure that the tools employed in data collection were an authentic assessment of the psychological impacts of DDH on the parents.

Questions of ethical character, therefore, defined the study as well as the set of rules that governed the manner in which the study would be conducted. Participants' rights were of utmost importance, and they provided their consent. This study received approval to protect the identity and rights of the participants. Every participant was requested and agreed to be involved in the study and receive information concerning the aim, tasks, and potential harm of the study. The rights of the participants were not just acknowledged, but deeply respected, and participants' identity was also concealed, with all the information being gathered and possessed by the researchers. Data containing private identifiers were omitted and made anonymous (Gyurkovits et al., 2021). Thus, the aim of the present research was to obtain knowledge concerning the psychological impact of diagnosis and management of DDH in parents. To achieve the above objective, the study aimed at using reliable assessment instruments and accurate procedures to assess and analyze the findings to bring to light the emotional aspect that parents go through and identify the areas of need for intervention (Sadeq & Al-Dujaili, 2023). The longitudinal nature of the study enabled the evaluation of the temporal patterns of mental health, which gave a broad perspective on how the diagnosis and treatment of DDH influenced parents. From the projected research, the generalisability is expected to help make a significant insight towards understanding the mental health effects of DDH as well as helping in developing ways of assisting parents in the diagnosis and treatment of DDH.

RESULTS

This research focuses on the parents' psychological state after their child's diagnosis and treatment of Developmental Dysplasia of the Hip (DDH). Employing different measures of electronic statistics, we assess impacts on mental health, including anxiety, depression rates, as well as overall well-being disturbances, and then compare and contrast

treatment type, parental gender, and socioeconomic effects on such alterations.

The results show that the sample is relatively balanced in gender, with 48% male and 52% female participants. Socioeconomic status is also well-distributed, with 32% of parents classified as lower, 34% as middle, and 34% as upper socioeconomic status. The treatment types for children with Developmental Dysplasia of the Hip (DDH) are equally divided, with 50% undergoing surgical treatment and 50% receiving non-surgical treatment. These distributions indicate a diverse sample, providing a broad perspective on how different demographics and treatment types might affect parental mental health outcomes in the study.

The descriptive statistics reveal a general improvement in parental mental health over the six-month treatment period for children diagnosed with DDH. The mean GHQ-28 scores decreased from 22.70 pre-treatment to 19.24 post-treatment, indicating a reduction in general psychological distress. Similarly, both state and trait anxiety levels, measured by the STAI, showed declines: state anxiety from 23.34 to 19.60 and trait anxiety from 21.66 to 18.62. The BDI scores also decreased from 14.28 pre-treatment to 11.20 post-treatment, suggesting reduced depressive symptoms. The average duration of the child's treatment was 7.34 months, with an average age of 3 years at diagnosis.

The independent samples t-test results indicate a significant difference in GHQ-28 post-treatment scores after six months, with a t-value of 5.705 and a p-value of .000. The mean difference of 3.120 suggests that one group experienced greater improvement in general health scores, with a 95% confidence interval ranging from 2.020 to 4.220.

The paired samples t-test indicates a significant decrease in state anxiety scores from pre-treatment to post-treatment, with a mean difference of 3.740 and a standard deviation of 1.468. The t-value of 18.013 and a p-value of .000 suggest that the anxiety reduction is statistically significant. The 95% confidence interval (3.323 to 4.157) confirms a consistent decrease, supporting the hypothesis that parental anxiety levels improve following their child's DDH treatment.

The ANOVA results show no significant differences in post-treatment psychological scores across different socioeconomic groups. The GHQ-28 F-value is 0.729 with a p-value of 0.488, indicating no significant variation in general health scores between groups. Similarly, the scores of STAI State Anxiety ($F = 0.599$, $p = 0.554$) and Trait Anxiety ($F = 0.768$, p

= 0.470) do not significantly differ by socioeconomic status. The BDI results ($F = 0.519$, $p = 0.598$) also reveal no significant differences in depression scores. Multiple comparisons using Tukey HSD confirm these findings, with no pairwise differences reaching statistical significance, suggesting uniform mental health impacts across socioeconomic groups.

The GHQ-28 Post-Treatment model summary indicates that the predictors age of the parent, duration of the child's treatment, and age of the child at diagnosis explain 16.3% of the variance in post-treatment GHQ-28 scores ($R^2 = 0.163$). Duration of treatment significantly predicts GHQ-28 scores ($\beta = 0.378$, $p = 0.040$), suggesting longer treatment is associated with higher post-treatment health scores. The age of the parent and the age at diagnosis are not significant predictors.

The STAI State Anxiety Post-Treatment model indicates that the parent's age, treatment duration, and diagnosis age explain 18.6% of the variance in post-treatment state anxiety scores ($R^2 = 0.186$). While the duration of treatment approaches significance ($p = 0.055$), suggesting it may influence anxiety levels, the parent's age and age at diagnosis are not significant predictors.

The BDI Post-Treatment model explains 14.8% of the variance in post-treatment depression scores ($R^2 = 0.148$). None of the predictors, the age of the parent, the duration of the child's treatment, or the age at diagnosis, are statistically significant, with p -values greater than 0.05. Although the age of the child at diagnosis has a higher beta coefficient (.263), suggesting a potential relationship, it does not reach significance ($p = 0.101$).

The crosstabulation shows a significant association between the gender of the parent and the type of treatment chosen (surgical or non-surgical) for their child. Out of 24 male parents, 22 chose surgical treatment, while only 2 chose non-surgical. In contrast, out of 26 female parents, three opted for surgical treatment and 23 for non-surgical. The chi-square test confirms that this association is highly significant ($\chi^2 = 32.051$, $df = 1$, $p < .001$). Fisher's Exact Test also supports this with a p -value of .000, indicating that the difference in treatment choices between male and female parents is statistically significant.

DISCUSSION

This paper aimed to determine the psychological effects of treatment of Developmental Dysplasia of the Hip for children and the effects on parents. Therefore, our findings show that there has been

great enhancement in the degree of parental mental health at the end of treatment, but at the same time, identify some of the concerns that include the socioeconomic status of the parents and gender in treatment options. The findings suggest that the parents' level of psychological distress decreased, which can be seen in the overall lower score in GHQ-28, state and trait anxiety (measured by STAI), and depressive symptoms (as measured by BDI). These results are congruent with the reviews of the literature on parents' psychological well-being during a child's illness. For instance, prior research has established that as much as the parents suffer from psychological morbidity right after receiving a child's diagnosis, subsequent treatment makes the patients' mental health better (Theunissen et al., 2022; Sadeq & Al-Dujaili, 2023). According to the side of the study showed that the mean anxiety level reduced from pre-treatment to post-treatment; thus, the current literature highlights that parental anxiety can be reduced as they get used to the child's treatment plan (Abd Elkhair et al., 2020). Therefore, these findings agree with the paired samples t -test that depicted a significant reduction in state anxiety. The preceding research has also depicted similar trends where increased familiarity and routine result in reduced anxiety in other chronic pediatric illnesses (Tao et al., 2023).

However, this research pointed out that SES has no differential impact on psychological results, whether based on GHQ-28, STAI, or BDI, as evidenced by the F -value in ANOVA. It is different from some literature, which shows that people of lower socioeconomic status have higher stress levels and worse health (Sawamura et al., 2024). This research result may be explained by the type of sample used in the study, as most participants reported a rather evenly distributed SES, which could explain the absence of differences in mental health. However, this may also mean that there are no huge discrepancies between the groups because the psychological impact of DDH is observed across different SES, wherein stress related to the diagnosis and treatment could be comparable, as shared experiences (Theunissen et al., 2023). These treatments also highlighted the gender of the parent, with the male parent's preference for the surgical treatment while the female parent preferred the non-surgical treatment. This gender difference in treatment decisions is quite interesting and coherent with the study done in another study where it is noted that parents tend to make decisions regarding healthcare for their children based on gender bias

attitudes and expectations (Deurloo et al., 2019). Men's parents seem to opt for surgical procedures, and this may be because they are more inclined to aggressive treatment methods. In contrast, women's parents would prefer non-surgical treatment because they believe it to be less risky or less intrusive.

In addition, the regression analysis showed that the child's post-treatment GHQ-28 scores were predicted by his/her treatment duration, which means the longer treatment the child receives, the higher the psychological distress level will be. This finding is in line with literature showing that long-treatment courses harm parents' stress and anxiety levels since long intervals of medical ambiguity and regular visits to clinics augment the mental load (Sadeq & Al-Dujaili, 2023). However, the study finds the age of the parent and the age of the child at diagnosis as factors affecting the mental health of the patient. This is supported by some studies indicating that young parents or parents with older children might be more or less stressed due to different life cycles and expectations (Topak et al., 2022). This non-significance may be attributed to the fact that the majority of the parents in our sample were within the young age group, or the type of diagnosis (DDH) and subsequent treatment may not influence parents depending on those characteristics. However, the evaluation pre-treatment and six months from the initiation of treatment offer an insight into the time patterns of parental mental health. We can, therefore, conclude that the improvement in the psychological scores over a certain period, as proposed by the hypothesis of treatment and adaptation, is effective in improving the mental well-being of the patients. It is consistent with earlier research, which points out that continuity of medical care coupled with efficient management techniques eradicates psychological suffering among parents in the long run (Harry et al., 2022).

This research discusses the developments made and the issues that remain concerning the psychological effect of DDH on parents. The decrease in a given mental health symptoms during treatment indicates the possibility of an enhancement of parental well-being as they coped with the child's condition and the recommended treatment. However, the difference in treatment preferences by gender and the similar psychological effects across the different socioeconomic statuses call for specific interventions. It is therefore important for future studies to take a closer look at such factors, like why women appear to have a preferred treatment choice and why SES impacts parental mental health.

Similarly, qualitative approaches could better offer a fuller picture of the parental need to target support services.

CONCLUSION

This study also demonstrates the strong psychological burden that parents of children with DDH experience and shows that there are notable improvements in the levels of general psychological distress, anxiety, and depression over the course of treatment. These findings also aim at the emotional burden that comes along with managing a child's DDH, and this makes a call for focused support interventions for parents to handle this experience. The decrease in the level of psychological distress from the first time of diagnosis to the second time indicates that despite the fact that being diagnosed with a health condition such as cancer can psychologically hurt a person, the diagnosis does not have to necessarily mean the end of normal mental health as far as the patient receives proper treatment and management. Furthermore, the results concerning predictors of the effectiveness of the treatments and parents' gender stress the need for individual approaches in chosen therapeutic interventions. Further studies in this area should be conducted to examine these factors, focus on the long-term outcomes of patients, and establish a multi-faceted support model to promote parents' well-being during the treatment process.

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REFERENCES

1. Abd Elkhair, S., Mohamed, A. R., Mohamed, S. A., & Elbarabary, H. M. (2020). Effect of Protocol of Care for Mothers on Selected Postoperative Outcomes among their Children with Developmental Dysplasia of the Hip. *Indian Journal of Public Health Research & Development*, 11(3).
2. Bozkurt, C., Sarıkaya, B., Sipahioğlu, S., Altay, M. A., Çetin, B. V., & Bekin Sarıkaya, P. Z. (2021). Effects of developmental dysplasia of the hip screening program on the treatment strategies: A retrospective study from a tertiary care hospital in the southeast region of Turkey. *Acta Orthop Traumatol Turc*, 55(5), 396-401.
3. Deurloo, J. A., Konijnendijk, A. A. J., Lanting, C. I., & Boere-Boonekamp, M. M. (2019). Developmental Dysplasia of the Hip-a Guideline for Dutch Youth Health Care. *Youth Health Care in Europe: Changing contexts Influencing youth and their surroundings, 20th European Union for School and University Health and Medicine (EUSUHM) 11-13 September Rotterdam, Netherland*, 50.

4. Gambling, T. S., & Long, A. (2019). Psycho-social impact of developmental dysplasia of the hip and differential access to early diagnosis and treatment: a narrative study of young adults. *SAGE open medicine*, 7, 2050312119836010.
5. Gibbard, M., Zivkovic, I., Jivraj, B., Schaeffer, E., Robillard, J. M., & Mulpuri, K. (2021). A global survey of patient and caregiver experiences throughout care for developmental dysplasia of the hip. *Journal of Pediatric Orthopaedics*, 41(6), e392-e397.
6. Gyurkovits, Z., Sohár, G., Baricsa, A., Németh, G., Orvos, H., & Dubs, B. (2021). Early detection of developmental dysplasia of hip by ultrasound. *Hip International*, 31(3), 424-429.
7. Harry, A., Johnston, C., Twomey, S., & Wakely, L. (2022). A Survey of Parents' and Carers' Perceptions of Parenting a Child With Developmental Dysplasia of the Hip. *Pediatric Physical Therapy*, 34(3), 328-333.
8. Roposch, A., Warsame, K., Chater, A., Green, J., Hunter, R., Wood, J., ... & Nazareth, I. (2020). Study protocol for evaluating aid to diagnosis for developmental dysplasia of the hip in general practice: controlled trial randomized by practice. *BMJ open*, 10(12), e041837.
9. Sadeq, H. B., & Al-Dujaili, A. H. (2023). Psychological distress among caregivers of children with developmental dysplasia of the hip. *Remittances Review*, 8(4).
10. Sadeq, H. B., & Al-Dujaili, A. H. (2023). Self-Esteem Of Caregivers Of Children with Developmental Dysplasia Of The Hip. *Kufa Medical Journal*, 19(2).
11. Sawamura, K., Kitoh, H., Matsushita, M., Mishima, K., Kamiya, Y., & Imagama, S. (2024). Quality of life in adult patients with developmental dysplasia of the hip who were treated for hip dislocation during childhood. *Journal of Pediatric Orthopaedics B*, 10-1097.
12. Tao, Z., Wang, J., Li, Y., Zhou, Y., Yan, X., Yang, J., ... & Li, Y. (2023). Prevalence of developmental dysplasia of the hip (DDH) in infants: a systematic review and meta-analysis. *BMJ Paediatrics Open*, 7(1).
13. Theunissen, W. W. E. S., van der Steen, M. C., van Veen, M. R., van Douveren, F. Q. M. P., Witlox, M. A., & Tolk, J. J. (2022). Parental experiences of children with developmental dysplasia of the hip: a qualitative study. *BMJ open*, 12(9), e062585.
14. Theunissen, W. W., Van der Steen, M. C., Van Veen, M. R., Van Douveren, F. Q., Witlox, M. A., & Tolk, J. J. (2023). Strategies to optimize the information provision for parents of children with developmental dysplasia of the hip: a qualitative study. *Bone & Joint Open*, 4(7), 496-506.
15. Topak, D., Turgut, C., Kuscu, B., & Dogar, F. (2022). Pre- and post-treatment comparison of the anxiety, depression, and stress conditions of fathers with children with developmental dysplasia of the hip in early childhood. *Med Science*, 11, 289-293.
16. Vatansever, E., Altay, M. A., Çetin, B. V., Kaptan, A. Y., & Ok, M. (2022). The Effect of the Parents' Socioeconomic Status on the Treatment Process With the Orthopedic Approach in Developmental Dysplasia of the Hip. *Harran Üniversitesi Tıp Fakültesi Dergisi*, 19(3), 499-504.
17. Wakely, L., Easey, P., Leys, J., & Johnston, C. (2021). Exploring the lived experience of parenting a child with developmental dysplasia of the hip. *Physical & Occupational Therapy In Pediatrics*, 41(5), 503-514.