

Maternal perceptions and awareness regarding developmental dysplasia of the hip in children among mothers and pregnant women in Makkah City, Saudi Arabia

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ABSTRACT

Background: Developmental dysplasia of the hip (DDH) is a spectrum of disorders that develop in utero, involving the femoral head and acetabular cup development, ranging from dysplasia to dislocation. The prevalence of DDH in Saudi Arabia is 10.46 per 1000 live births. However, the late presentation of DDH in Saudi Arabia is around 30%, believed to be significantly due to a lack of awareness of the disease among mothers and pregnant women. **Aims:** This study aimed to measure maternal perceptions and awareness regarding DDH in children among mothers and pregnant women in Makkah City, Saudi Arabia. **Method:** In total, 406 women participated in an electronic survey. The survey questions were adapted from previously published research, and the questionnaire was available in Arabic. **Results:** The age distribution of the participants ranged from below 20 to over 50 years, with the largest group being 31–40 years old. Most of the participants had a university-level education (61.1%). The overall assessment showed a predominance of poor knowledge (41.1%), followed by good knowledge (34.7%), and then medium knowledge (24.1%). **Conclusion:** The present study revealed significant knowledge gaps and barriers to the early detection and intervention of DDH among Makkah City mothers and pregnant women. The findings underscore the need for targeted educational campaigns, increased access to screening programs, and heightened healthcare provider knowledge to improve DDH's perception and awareness. Future interventions should focus on addressing these gaps and promoting early detection and intervention strategies to minimize the long-term consequences of DDH.

Keywords: Awareness, congenital hip dislocation, developmental dysplasia of the hip DDH, pediatric abnormalities, pediatric orthopedic, Saudi Arabia

Introduction

Developmental dysplasia of the hip (DDH) is a spectrum of disorders that develops in utero involving the femoral head and acetabular cup development; it ranges from dysplasia

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to dislocation.^[1] Historically called congenital dislocation of the hip, the term was gradually replaced by developmental dysplasia to include infants born with normal hips but later developed dysplasia or dislocation.^[2] Despite this disorder's long history and the many specialties involved, there is still limited knowledge about DDH's exact etiopathogenesis. This is mainly due to the genetic, mechanical, and environmental risk factors that define DDH's multifactorial etiopathogenesis.^[3] The most well-known risk factors include female sex, being the first-born, breech position, swaddling, post-maturity, in utero physical limitation, and family history.^[4] Once the condition is identified and diagnosed, treatment options vary. Conservative management with a Pavlik harness or closed reduction and a hip spica cast may be recommended for younger patients. On the contrary, surgical intervention, such as open reduction and pelvic osteotomy, with or without femoral shortening osteotomy, may be considered for older patients.^[5] Failure to identify DDH can lead to significant impairments, including chronic hip pain, osteoarthritis, leg length discrepancy, altered gait, and joint contractures.^[6] DDH screening includes a physical examination (used almost universally) and, in some countries, hip ultrasonography.^[7] These methods are controversial because 15% of cases go undetected by examination or ultrasonography.^[8] DDH's prevalence in Saudi Arabia is 10.46 per 1000 live births,^[9] considered high compared to that in the U.K., which is 1.2 per 1000 live births.^[10] Furthermore, in Saudi Arabia, late presentation of DDH is around 30%^[11]; this is believed to be primarily due to a lack of awareness of the disease among mothers and pregnant women. For this reason, our study aimed to measure maternal perceptions and awareness regarding DDH in children among Makkah City mothers and pregnant women. This study utilized a survey instrument from a previous study in the Aseer region, and consent was obtained from the original authors.^[12]

Materials and Methods

Study design

The study was designed as a cross-sectional survey-based investigation. A previously prepared survey from another study was employed,^[12] and data were collected individually from mothers and pregnant women through an electronic survey.

Study population

The target sample in this study included all mothers and pregnant women in Makkah City. According to the Saudi General Authority for Statistics,^[13] the 2022 Saudi census reported 596,972 families in Makkah City, representing the estimated number of mothers.

Inclusion criteria

- 1- Any woman who has had a child in Makkah City.
- 2- Any pregnant woman in Makkah City.
- 3- Women who became pregnant but did not complete the pregnancy.

Exclusion criteria

- 1- Women who refused to participate.

Primary outcome

To assess awareness of DDH among mothers and pregnant women in Makkah City.

Secondary outcomes

- 1- To measure the prevalence of DDH in Makkah City.
- 2- To identify the association between different sociodemographic factors and the level of awareness about DDH.
- 3- To assess the association between patients with DDH and sociodemographic characteristics.
- 4- To measure the relationship between chronic diseases and the presence of DDH.

Study procedures

An electronic survey was distributed to the target sample, and data collectors collected the data. The survey's questions were derived from previously published research,^[12] and the questionnaire was available in Arabic.

Sample size

The sample size was calculated using Epi Info software version 2.1's sample size calculator, considering a confidence interval of 95% and a significance level (*P* value) of 5%. Based on the results, we determined that 384 Makkah City mothers and pregnant women were needed to participate in this study. However, we increased the number to 406 to address potential response biases.

Statistical analysis plan

We employed a 95% confidence interval with a significance level of 5% to assess the statistical significance between variables. A *P* value of less than 0.05 was considered significant. Data were collected via an Excel sheet and analyzed using IBM SPSS software, version 26. Descriptive statistics were utilized, including measures of central tendency, for data description. The Chi-square test was applied for categorical data analysis, and regression analysis was performed to identify correlations.

Results

A total of 406 women completed the survey.

Table 1 shows the demographic data of the participants. The age distribution of the participants ranged from below 20 to over 50 years. The largest group, aged 31–40 years, contained 127 women, or 31.3% of the participants. The next largest group, aged 41–50 years, comprised 124 people, or 30.5% of the respondents. Most participants (248, 61.1%) had a university-level education. In addition, 21.7% had completed high school, accounting for 88 people. The majority (69.1%) had three or more prior pregnancies; this group included 280

women. In contrast, 59.4% (241 women) had never undergone an abortion, while (28.3%, 115 women) had experienced one abortion.

Table 2 shows the questions used to determine the level of awareness about DDH in children among Makkah City mothers and pregnant women. Regarding whether they knew about DDH, most participants (240, 59.1%) answered “yes.” When asked if they knew how DDH is treated, the majority (265, 65.3%) answered “no.” Most (268, 66.0%) denied knowledge of DDH’s possible complications. When considering the mode of delivery as a potentially major cause of DDH, the majority (321, 79.1%) answered “yes.” However, when asked if they had a child with DDH, most (391, 96.3%) responded “no.” Regarding whether a child with DDH could be recognized by their walk, most (280, 69.0%) answered “yes.” When asked whether DDH causes the child pain, the majority (343, 84.5%) responded “yes.”

Table 3 presents the sources of information about DDH in children among Makkah City mothers and pregnant women. The most frequently cited source of information regarding DDH was relatives, with 157 responses (60.4%), followed by social media, with 80 responses (30.8%).

Table 4 illustrates the known causes of DDH in children among Makkah City mothers and pregnant women. When asked about the most common cause of DDH, the majority (199, 79.3% believed that the mode of delivery was the primary factor.

Table 5 shows the association between the level of knowledge and personal and obstetric data of Makkah City mothers and pregnant women. The participants were categorized into three groups based on their responses to the questions in Table 2: good, medium, and poor knowledge. Individuals aged 31–40 years exhibited the highest level of knowledge (46, 32.6%), followed by the 41–50 years age group with 41 participants (29.1%). Surprisingly, the 31–40 years age group also had the highest number of participants with poor knowledge (53, 31.7%), followed by the 41–50 years age group (51, 30.5%). The *P* value of 0.998 suggests no significant association between age groups and knowledge levels.

When the educational level was assessed, no substantial association was observed between increased educational attainment and awareness, although a slight increase in awareness was noted among postgraduate participants. Concerning the number of pregnancies, no significant association was found between the level of gravidity and awareness. However, relating to the number of abortions, a significant association was observed (*P* = 0.038), indicating a decrease in awareness with an increase in the number of abortions.

Furthermore, there was a high association between having a child with DDH and increased awareness (*P* = <0.001).

Table 1: Personal data of study perception and awareness about DDH in children among mothers and pregnant ladies in Makkah City

Personal data	Overall (n=406)
Age (years)	
21–30	90 (22.2%)
31–40	127 (31.3%)
41–50	124 (30.5%)
<20	4 (1.0%)
>50	61 (15.0%)
Educational level	
Diploma	34 (8.4%)
High school	88 (21.7%)
Illiterate	7 (1.7%)
Postgraduate	29 (7.1%)
University	248 (61.1%)
Number of pregnancies	
3 or more	280 (69.1%)
Once	61 (15.1%)
Twice	64 (15.8%)
Number of Abortions	
3 or more	18 (4.4%)
Never	241 (59.4%)
Once	115 (28.3%)
Twice	32 (7.9%)

Table 2: Items of measuring awareness about DDH in children among mothers and pregnant ladies in Makkah City

Items of awareness	Overall (n=406)
Do you know about DDH?	
No	166 (40.9%)
Yes	240 (59.1%)
Do know how DDH is treated?	
No	265 (65.3%)
Yes	141 (34.7%)
Do you know about DDH complications?	
No	268 (66.0%)
Yes	138 (34.0%)
Is the mode of delivery a major cause of DDH?	
No	85 (20.9%)
Yes	321 (79.1%)
Do you have a child with DDH?	
No	391 (96.3%)
Yes	15 (3.7%)
Can you know if the child has DDH from his walk?	
No	126 (31.0%)
Yes	280 (69.0%)
Does DDH cause pain to the child?	
No	63 (15.5%)
Yes	343 (84.5%)

Figure 1 illustrates the level of knowledge about DDH in children among Makkah City mothers and pregnant women. The graph indicates a predominance of poor knowledge in 167 individuals (41.1%), followed by good knowledge in 141 individuals (34.7%), and medium knowledge in 98 individuals (24.1%).

Table 3: Source of information about DDH in children among mothers and pregnant ladies in Makkah City

Source of information	
Campaigns	13 (5.0%)
My baby	6 (2.3%)
Practice	4 (1.5%)
Relevant	157 (60.4%)
Social media	80 (30.8%)

Table 4: Known causes of DDH in children among mothers and pregnant ladies in Makkah City

Cause of DDH	
Fetus position in the uterus	39 (15.5%)
Fetus sex	4 (1.6%)
Genetic predisposition	9 (3.6%)
Mode of delivery	199 (79.3%)

Table 5: Association between level of knowledge and, personal and obstetric data of mothers and pregnant ladies in Makkah city

	Good (n=141)	Medium (n=98)	Poor (n=167)	P
Age (years)				0.998
<20	2 (1.4%)	1 (1.0%)	1 (0.6%)	
21–30	31 (22.0%)	22 (22.4%)	37 (22.2%)	
31–40	46 (32.6%)	28 (28.6%)	53 (31.7%)	
41–50	41 (29.1%)	32 (32.7%)	51 (30.5%)	
>50	21 (14.9%)	15 (15.3%)	25 (15.0%)	
Educational level				0.474
Illiterate	2 (1.4%)	0 (0.0%)	5 (3.0%)	
High school	31 (22.0%)	19 (19.4%)	38 (22.8%)	
Diploma	12 (8.5%)	9 (9.2%)	13 (7.8%)	
University	84 (59.6%)	60 (61.2%)	104 (62.3%)	
Postgraduate	12 (8.5%)	10 (10.2%)	7 (4.2%)	
Number of pregnancies				0.138
Once	16 (11.3%)	12 (12.4%)	33 (19.8%)	
Twice	28 (19.9%)	15 (15.5%)	21 (12.6%)	
3 or more	97 (68.8%)	70 (72.2%)	113 (67.7%)	
Number of abortions				0.038
Never	89 (63.1%)	47 (48.0%)	105 (62.9%)	
Once	39 (27.7%)	35 (35.7%)	41 (24.6%)	
Twice	9 (6.4%)	13 (13.3%)	10 (6.0%)	
3 or more	4 (2.8%)	3 (3.1%)	11 (6.6%)	
Having a child with DDH				<0.001
No	127 (90.1%)	97 (99.0%)	167 (100.0%)	
Yes	14 (9.9%)	1 (1.0%)	0 (0.0%)	

Discussion

The present study aimed to assess Makkah City mothers' and pregnant women's perception and awareness of DDH in children. The findings revealed important insights into knowledge gaps, sources of information, sociodemographic factors influencing awareness, the prevalence of DDH, barriers

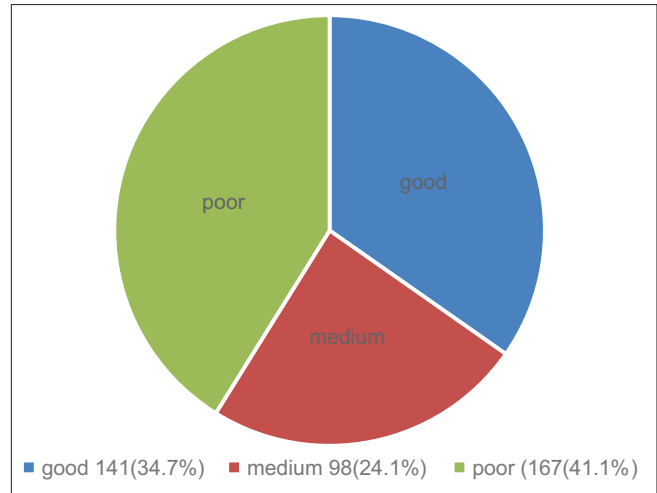


Figure 1: Level of knowledge about DDH in Children among mothers and pregnant ladies in Makkah city

to early detection, and potential areas for improvement in primary healthcare.

Knowledge gap awareness level

A total of 406 women participated in the survey. Study results indicated that while the majority of participants were aware of the condition (240, 59.1%), their knowledge about DDH treatment (265, 65.3%) and complications (268, 66.0%) was found to be limited. This lack of awareness could potentially lead to delayed detection and intervention, resulting in long-term consequences for affected children, including chronic hip pain, osteoarthritis, leg length discrepancy, altered gait, and joint contractures.^[6] These findings are consistent with previous studies that demonstrated inadequate knowledge about DDH among mothers and pregnant women. For instance, research conducted in the Riyadh region among a comparable population showed similar results, with a significant proportion of participants lacking knowledge about DDH risk factors, symptoms, and treatment options.^[8]

Educational interventions and sources of information

The impact of educational campaigns on DDH awareness was also assessed in this study. Results showed that for participants, the primary sources of information about DDH were relatives (157, 60.4%), followed by social media (80, 30.8%). This highlights the importance of targeted educational campaigns to increase awareness and knowledge about DDH among mothers and pregnant women. Similar findings have been reported in other studies, emphasizing the effectiveness of educational interventions in improving awareness and early detection of DDH.^[14]

Sociodemographic factors and awareness

The study also aimed to identify the association between different sociodemographic factors and the level of awareness about DDH. The results indicated that age and educational level did

not show a significant association with awareness. However, having a child with DDH was strongly associated with increased awareness. These findings suggest that personal experiences and exposure to DDH cases play a crucial role in enhancing awareness among mothers and pregnant women. This highlights the importance of targeted interventions and support for parents who have children with DDH.

Prevalence of DDH in Saudi Arabia

It is worth noting that the prevalence of DDH in Saudi Arabia was found to be higher (10.46 per 1000 live births) compared to some other countries, such as the U.K. (1.28 per 1000 live births).^[9,15] This high prevalence underscores the region's need for increased awareness, early detection, and intervention strategies.

Barriers to early detection and intervention

The study identified potential barriers hindering early detection and intervention. Factors such as limited access to screening programs, lack of awareness among healthcare providers, and cultural beliefs and practices may contribute to the delayed presentation of DDH cases. These findings align with previous research conducted in various countries, including Australia and the U.K., which have demonstrated similar barriers to early detection and intervention.^[16]

Limitations

This study has some limitations. The sample population was limited to Makkah City, potentially limiting the generalizability of the findings to the entire Saudi Arabian population. Future research with larger and more diverse samples could provide a more comprehensive understanding of DDH awareness across the country. In addition, the study relied on self-reported data, which may be susceptible to recall bias. Future studies could incorporate objective measures of knowledge to enhance the reliability of the findings.

Conclusion

The study identified significant knowledge gaps and barriers to early detection and intervention of DDH among mothers and pregnant women in Makkah City, Saudi Arabia. The findings underscore the need for targeted educational campaigns, increased access to screening programs, and enhanced healthcare provider awareness to improve the level of DDH perception and awareness. Future interventions should focus on addressing these gaps and promoting early detection and intervention strategies to minimize the long-term consequences of DDH.

Benefits to primary healthcare

The findings of this study offer valuable insights for primary healthcare professionals managing mothers and pregnant women. By highlighting knowledge gaps regarding DDH treatment and complications, the study emphasizes the need for targeted educational initiatives within primary care settings. In addition, the identification of relatives and social media as primary

information sources underscores the importance of equipping healthcare providers with effective communication strategies to address misinformation and promote reliable sources of DDH information. Furthermore, the link between personal experience and awareness suggests the potential benefits of establishing support groups within primary care for families affected by DDH. Overall, this study informs the development of strategies within primary healthcare to enhance awareness, promote early detection, and ultimately improve patient outcomes for DDH.

Ethical approval

Ethical approval for this study was granted by the Institutional Review Board (IRB) at the General Directorate of Health Affairs in Makkah city. The approval reference number was (H-02-5-076-1023-1013).

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Tachdjian MO, Matson DD. Orthopaedic aspects of intraspinal tumors in infants and children. *J Bone Joint Surg Am* 1965;47:223-48.
2. Hall MRP, Handley DA, Webster CU. The surgical treatment of haemophilic blood cysts. *J Bone Joint Surg Br* 1962;44:781-9.
3. Harsanyi S, Zamborsky R, Krajciova L, Kokavec M, Danisovic L. Developmental dysplasia of the hip: A review of etiopathogenesis, risk factors, and genetic aspects. *Medicina (Kaunas)* 2020;56:153.
4. Nandhagopal T. Developmental Dysplasia of the Hip. *StatPearls*; 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK563157/>. [Last accessed on 2023 May 20].
5. Alanazi HM, Alenezi OT, El-Fetoh NMA, Ali GY, Albaqawi AS, Altaieb FF. Pattern of congenital dislocation of the hip in Arar city, Northern Saudi Arabia. *J Health Med Nurs* 2017;43:35-40.
6. Sacks H, Pargas-Colina C, Castañeda P. Developmental dysplasia of the hip: Guide for the pediatric primary care provider. *Pediatr Ann* 2022;51:e346-52.
7. Ortiz-Neira CL, Paolucci EO, Donnon T. A meta-analysis of common risk factors associated with the diagnosis of developmental dysplasia of the hip in newborns. *Eur J Radiol* 2012;81:e344-51.
8. Alanazi MJ, Abokhesheim W, Al Saqer RM, Alasmari R, Alotaibi RM. Assessment of community levels of knowledge about developmental dysplasia of the hip, its risk factors, treatment, and complications in the Riyadh region, Saudi Arabia. *Cureus* 2022;14:e30465.
9. Sadat-Ali M. Developmental dysplasia of the hip (DDH) in Saudi Arabia: Time to wake up. A systematic review (1980-2018). *Open J Epidemiol* 2020;10:125.
10. Holmes J. Independent health care and the NHS; 2023 Available from: <https://www.kingsfund.org.uk/publications/independent-health-care-and-nhs>. [Last accessed on 2023 May 20].

11. Alhussainan TS. Developmental dysplasia of hip: A Saudi national concern. *J Musculoskelet Surg Res* 2018;2:77.
12. Alqarni MM, Shati AA, Al-Qahtani YA, Alhifzi WS, Alhifzi WS, Al Saleh RS, *et al.* Perception and awareness about developmental dysplasia of the hip in children among pregnant ladies in the Aseer region, southwestern Saudi Arabia. *Healthcare* 2021;9:1384.
13. Saudi Census 2022. Gastat Portal; 2022. Available from: <https://saudicensus.sa/en>. [Last accessed on 2023 Nov 18].
14. Gibbard M, Zivkovic I, Jivraj B, Schaeffer E, Robillard JM, Mulpuri K. A global survey of patient and caregiver experiences throughout care for developmental dysplasia of the hip. *J Pediatr Orthop* 2021;41:e392.
15. Broadhurst C, Rhodes AML, Harper P, Perry DC, Clarke NMP, Aarvold A. What is the incidence of late detection of developmental dysplasia of the hip in England? A 26-year national study of children diagnosed after the age of one. *Bone Joint J* 2019;101:281-7.
16. Chaarani MW, Al Mahmeid MS, Salman AM. Developmental dysplasia of the hip before and after increasing community awareness of the harmful effects of swaddling. *Qatar Med J* 2002;2002:17.