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ASSESSMENT OF PERCEPTION AND AWARENESS ABOUT DEVELOPMENTAL DYSPLASIA OF THE HIP, SIGNS & SYMPTOMS AMONG PARENTS IN KSA

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Abstract

Introduction: Developmental dysplasia of the hip (DDH) is a prevalent orthopedic disorder in infants globally, occurring at a rate of 11.5 per 1000 births. Risk factors include breech birth, female sex, family history, and being the firstborn. In Saudi Arabia, DDH affects 10.46 per 1000 live births, with higher prevalence in females and those with relevant family or breech delivery history. Despite some awareness among Saudi parents, there is still insufficient understanding of DDH causes, symptoms, and treatments. This lack of knowledge, especially among mothers and family physicians, is concerning due to the potential long-term consequences if DDH remains undiagnosed or untreated. **Objective:** To evaluate parents' knowledge and awareness of developmental dysplasia of the hip (DDH) and their attitude toward seeking medical attention in the Kingdom of Saudi Arabia. **Methodology:** This cross-sectional study used a questionnaire across Saudi Arabia. The study targeted adults aged 18 and older, with an estimated sample size of 350 participants. Data collected through a self-administered validated questionnaire in Arabic and English. **Results:** The study surveyed 533 participants in Saudi Arabia to assess perceptions and awareness of DDH. Findings revealed a predominantly young demographic, with 62.3% having some knowledge of DDH, primarily sourced from family and friends. Alarmingly, 70.9% were unaware of the condition's causes, and 79.5% had no direct experience with hip displacement, highlighting significant gaps in health awareness. While 21.8% reported complete recovery post-treatment, a substantial 55% were uncertain about their children's outcomes, reflecting the critical need for enhanced education on DDH to facilitate early diagnosis and intervention among parents in the

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region. **Conclusion:** In conclusion, the present study underscores a critical need for enhanced awareness and understanding of developmental dysplasia of the hip among parents in Saudi Arabia. The findings reveal significant gaps in knowledge regarding risk factors, symptoms, and treatment options, which could have profound implications for early diagnosis and intervention.

Keywords: Developmental dysplasia of the hip (DDH), Awareness, Saudi Arabia, Risk factors.

Introduction:

Developmental dysplasia of the hip (DDH) is a frequent orthopedic disorder affecting infants, With a global prevalence of 11.5 occurrences per 1000 births [1]. DDH can lead to discomfort, hip replacements in later age, and general mobility problems that lower quality of life [2]. DDH is a term used to describe a wide range of hip abnormalities, including actual dislocation, subluxation, and acetabular dysplasia, which all cause an unstable hip [3]. Although the cause of developmental dysplasia of the hip is complex, breech presentation, female gender, having a positive family history, and being the firstborn child have all been linked to risk [4]. With a prevalence of 10.46 per 1,000 live births, developmental dysplasia of the hip (DDH) is a serious health problem in Saudi Arabia [5]. A meta-analysis included different parts of the Saudi Arabia have revealed that DDH is more common in females, and strongly related with a positive family history of DDH and breach delivery [6]. A cross-sectional-research conducted in Aseer region had 253 respondents, discovered that the 65.6% of pregnant women were aware of DDH, and 43.5% knew how to manage it, and 5% of them reported having a child with DDH, but their awareness of its causes, symptoms, risks, and treatments were inadequate [7]. A cross-sectional study evaluated parents' understanding of their child's DDH diagnosis. Showed that over half of the parents who took part in the program were already familiar with DDH. In addition, moms showed a higher degree of DDH knowledge [8]. Prior studies have revealed a general lack of knowledge about Developmental Dysplasia of the Hip (DDH) among the Saudi Arabian population, especially mothers and family physicians. DDH is a common condition that can cause long-term complications if left undiagnosed and untreated. However, awareness and understanding of DDH remain low in those responsible for its early detection and management.

Objectives:

To evaluate parents' knowledge and comprehension of developmental dysplasia of the hip (DDH), including risk factors, symptoms, and signs and to assess parents' attitudes toward seeking medical attention as well as their perceptions of the importance of early DDH detection and treatment in Saudi Arabia.

Methodology:

Study design and Setting:

This is a descriptive cross-sectional community-based study was conducted in Saudi Arabia during 2024.We included all adult male and female participants from Saudi Arabia in our study. Participants are required to be at least 18 years old and willing to complete an anonymous online survey. Exclusion

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criteria included individuals under the age of 18, those who refused to participate, and those who did not complete the survey. Informed consent obtained from all individuals prior to their inclusion in the research.

Sample size:
Based on Saudi Arabia's population and Raosoft sample size calculators, 385 participants was the bare minimum needed to reach a 5% precision with a 95% confidence interval.

Inclusion and Exclusion criteria:
The inclusion criteria for this study were that participants must be adults aged 18 years or older and residents of Saudi Arabia. Individuals below the age of 18 and non-Saudis were excluded from the study.

Method for data collection and instrument (Data collection Technique and Tools):
Structured questionnaire was used as a study tool. The inquiry of this questionnaire was adapted from a published study [9]. The final version of the questionnaire consisted of 26 questions with 4 Sections.
Section 1 starts with a brief description of the study and the consent question.
Section 2 includes demographic features such as age, gender, nationality, region, educational level, and income.
Section 3, The participants was asked about their knowledge and awareness regarding developmental dysplasia of the hip and whether they have children with DDH or not. Section 4 include questions to test perception of participants about DDH treatment.

Scoring system:
Overall, 26 statements served to assess the participants' attitudes and degree of knowledge regarding DDH. 14 statements for demographics, and 12 for awareness and perception. One point is given for correct answers, and zero points are given for incorrect answers or "I don't know" with a maximum score of 12.
Awareness and perception score varied from 0 to 12 and was classified into 2 categories as follows: those with a score of 4 or below were classified as having low level of awareness and perception, those with a score of 5 or more were considered to have high level of awareness and perception.

Pilot test:
Twenty people received the survey and be asked to fill it out. This assist us in assessing the survey's clarity and determining if the study is feasible. The final analysis not contain the data collected during this initial study.

Analyzes and entry method:
Data was gathered and entered into the Microsoft Excel application for Windows (2016). Following this, then data imported into the Statistical Package for Social-Science Software (SPSS), version 20, for

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further statistical analysis.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (533). In particular, the age distribution is a notable approximation across demographics, with 28% being aged 31 to 40 years, and 27.4% being aged 30 or less, resulting in a mostly youthful demographic. Since there were more females (61.2%) of health and health related knowledge and attitudes among this population, there are implications on female representation in the population. Crop-wise about a third (33%) being in non-health related jobs and a substantial part of about a quarter (24%) unemployed, raises important questions about health awareness and knowledge of information. Marital status data shows that the majority (75%) are married with a similar percentage (75.6%) of participants reporting they are parents indicating the influence of family dynamics in determining health perceptions. The variable awareness of developmental dysplasia of the hip indicates that 62.3 percent of the participants have some knowledge about the condition almost all of it being generated from family and friends and it suggests the relevance of personal networks in the dissemination of the health information.

Table (1): Sociodemographic characteristics of participants (n=533)

Parameter		***No.***	***Percent (%)***
Age (Mean:39.1, STD:10.8)	30 or less	146	27.4
	31 to 40	149	28.0
	41 to 48	130	24.4
	49 or more	108	20.3
Gender	Female	326	61.2
	Male	207	38.8
Occupation	Student	64	12.0
	Health related job	44	8.3
	Non health related job	232	43.5
	Self-employed	27	5.1
	Unemployed	128	24.0
	Retired	38	7.1
Nationality	Saudi	533	100.0
	Non-Saudi	0	0
Region	Northern region	5	.9
	Southern region	242	45.4
	Central region	67	12.6
	Eastern region	61	11.4
	Western region	158	29.6
Marital status	Single	109	20.5

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	Married	400	75.0
	Divorced	19	3.6
	Widowed	5	.9
Educational level	Primary school	5	.9
	Middle school	7	1.3
	High school	105	19.7
	Bachelor's or diploma	363	68.1
	Postgraduate	53	9.9
Monthly income	< 5,000	235	44.1
	5,000-15,000	166	31.1
	15,001-30,000	111	20.8
	>30,000	21	3.9
Do you have children?	No	130	24.4
	Yes	403	75.6
Your relationship with this child	Parent	407	76.4
	Aunt or uncle	43	8.1
	Don't have a child	83	15.6
Have you ever heard about developmental dysplasia of the hip?	No	201	37.7
	Yes	332	62.3
Source of information *	Social media	147	27.6
	Friends and family	188	35.3
	College	49	9.2
	Self-education	60	11.3
	Doctors	70	13.1
	I don't know	178	33.4
	Others	3	0.6

Results may overlap

As shown in figure 1, The timing of diagnosis within the sample population of 533 respondents are revealed to be significant through the data presented regarding the age at which children were diagnosed. This was particularly notable as 41 children, 7.7% of the total sample were diagnosed from birth to six months, implying relatively early identification of conditions in this group. Whereas 7 children (1.3 per cent) were diagnosed between 6 months and 1 year, the diagnosis of only 4 children (0.75 per cent) occurred at 1 year, and only 2 children (0.37 per cent) at 2 years. Importantly, 479 respondents (89.8%) reported not having a diagnosed child.

Figure (1): Illustrates the time of diagnosis of child with DDH among participants.

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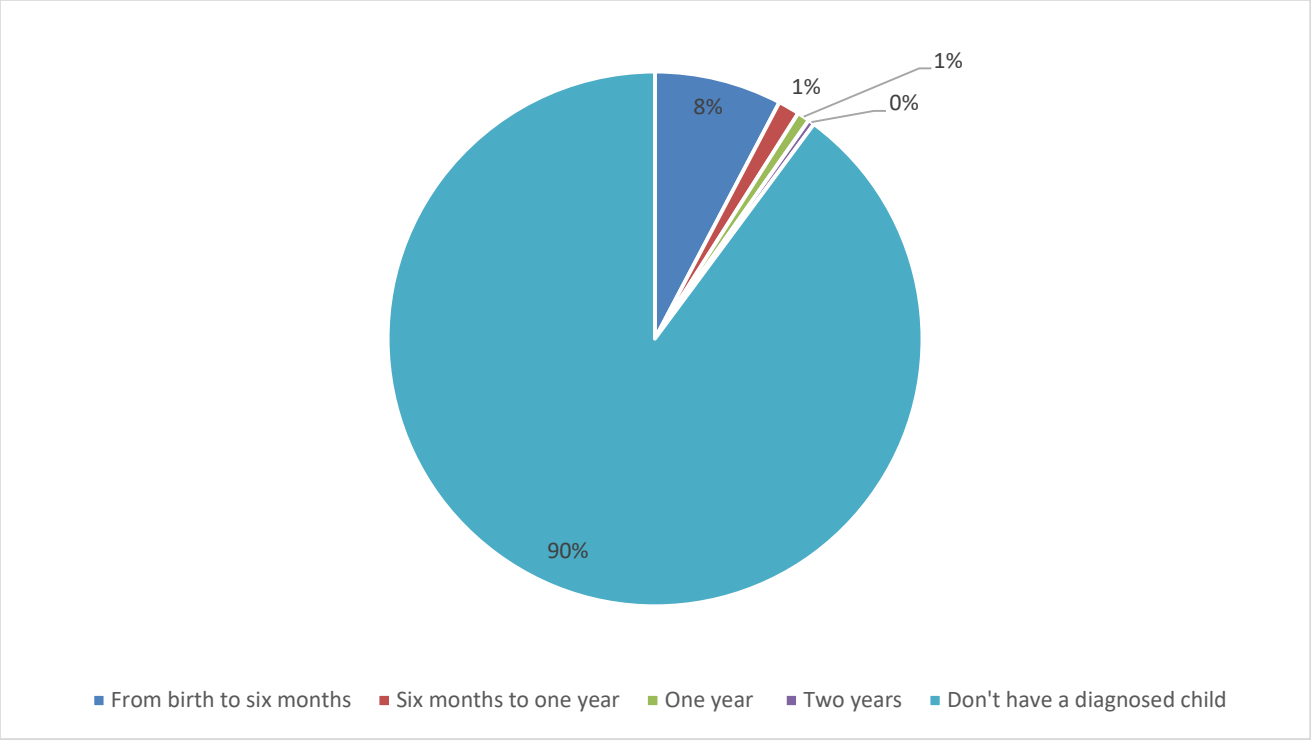

Table 2 shows the data presented regarding awareness and levels related to developmental dysplasia or hip (DDH) of a general population, which informed 533 respondents. It is highly significant that a very large majority of 79.5% stated they neither had nor observed children with hip displacement, suggesting that their experience is not direct. Additionally, a whopping 89.9 percent of respondents report that they don't have a diagnosed child, and this could in part explain the relatively low awareness of what causes and what treatment options exist for DDH. 70.9% participants did not know the causes of DDH, which is alarmingly, and can be a major barrier in early diagnosis and intervention. In addition, a substantial proportion of respondents were unsure about the effect of DDH on a child's mobility and best treatment modality, with 53.7% unsure if a child would be able to walk and 55.2% unable to indicate the best treatment approach.

Table (2): Parameters related to awareness levels regarding DDH in the general population (n=533).

Parameter		***No.***	***Percent (%)***
Do you have children with hip displacement?	No	424	79.5
	Yes	23	4.3
	I don't have children	86	16.1
How old was your child at the time of diagnosis?	From birth to six months	41	7.7
	Six months to one year	7	1.3
	One year	4	.8

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	Two years	2	.4
	Don't have a diagnosed child	479	89.9
If yes, what type of care does the child receive?	Conservative treatment	20	3.8
	Surgical intervention	15	2.8
	Nothing	52	9.8
	Don't have a diagnosed child	446	83.7
Do you know the causes of DDH?	No	378	70.9
	Yes	155	29.1
If they answer yes, choose if the following is a cause or no *	Genetic causes	81	15.2
	Setting position during pregnancy	61	11.4
	Mode of delivery	154	28.9
	Child gender	19	3.6
	I don’t know	340	63.8
Do you think that a child with DDH could walk?	No	70	13.1
	Yes	177	33.2
	I don’t know	286	53.7
Do you think the disease is preventable?	No	31	5.8
	Yes	221	41.5
	I don’t know	281	52.7
Hip dislocation is painful for the child	No	30	5.6
	Yes	237	44.5
	I don’t know	266	49.9
During pregnancy, if the fluid around the foetus is low in amount, developmental dysplasia of the hip can develop	No	39	7.3
	Yes	85	15.9
	I don’t know	409	76.7
Do you think that mode of delivery is related to DDH?	No	36	6.8
	Yes	238	44.7
	I don’t know	259	48.6
What do you think is the best treatment for DDH?	Initially surgical	53	9.9
	Initially no surgery	112	21.0
	Don’t know	294	55.2
	Surgery if it gets worse	74	13.9
What do you think is the prognosis after the treatment?	No treatment	7	1.3
	Completely healed	116	21.8
	Don’t know	293	55.0

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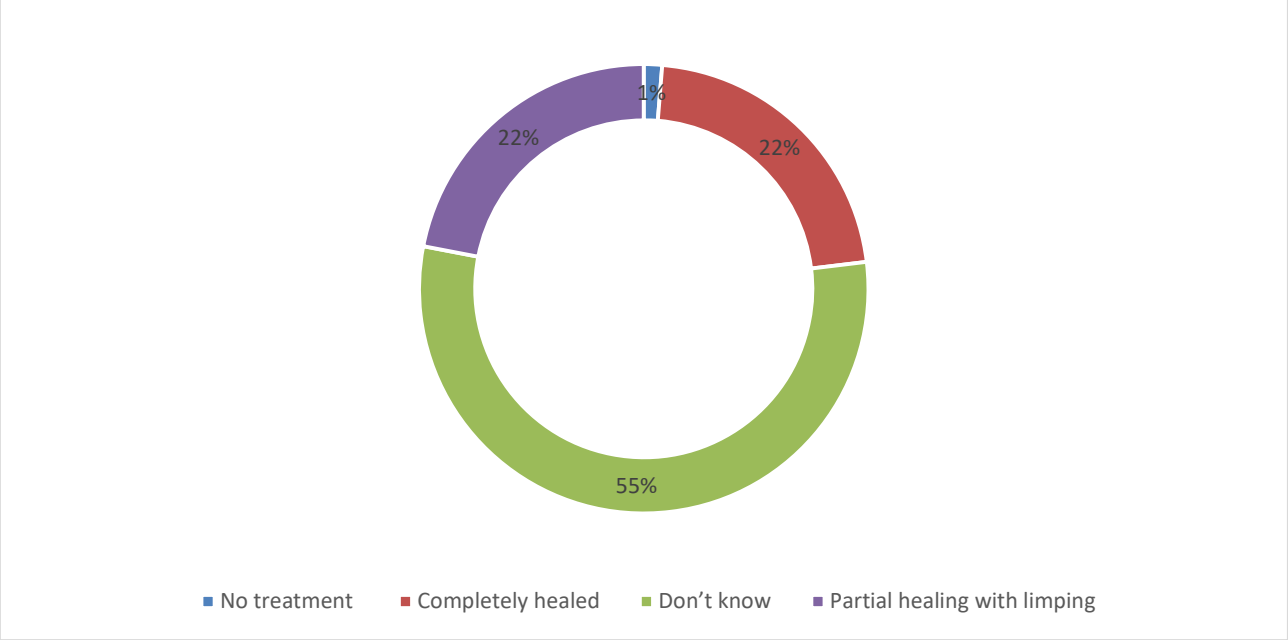
	Partial healing with limping	117	22.0
What do you think about early treatment?	No difference	9	1.7
	Better	295	55.3
	Don't know	228	42.8
	Late treatment better	1	.2

Results may overlap

As shown in figure (2), The sample size of 533 considered here and the data that it contains, bears significant prognostic implications on the post treatment outcome. Notably, 116 participants reported being completely healed after the intervention indicating 21.8% (116) were completely healed. For 22 percent of the respondents, partial healing resulted in limping, and was distributed across 117 individuals (22 percent), or seven individuals less than the other group, demonstrating that while some recovery was reached in these cases it was not full. A substantial number of 55%, or 293 people fell into the category of "don't know", an important area for exploration and follow up. In addition, 1.3 percent (7 people) received no treatment that might have influenced their recovery outcome.

Figure (2): Illustrates prognosis of DDH after treatment among participants.



Shown in Table 3, the data in it represents an alarming imbalance in the general population's awareness of Developmental Dysplasia of the Hip (DDH). Only 26.6% of respondents showed high awareness of this condition, indicating that 73.4% have low awareness.

Table (3): Shows awareness levels regarding DDH in the general population score results.

	Frequency	**Percent**

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High level of awareness	142	26.6
Low level of awareness	391	73.4
Total	533	100.0

Table (4) shows that awareness levels regarding DDH has statistically significant relation to occupation (P value=0.006) and hearing about DDH (P value=0.0001). It also shows statistically insignificant relation to gender, age, region, marital status, educational level, monthly income, having children and relationship with this child.

Table (4): Relation between awareness levels regarding DDH in the general population and sociodemographic characteristics.

Parameters		***Awareness level***		***Total (N=533)***	***P value****
		High level of awareness	**Low level of awareness**		
Gender	Female	93	233	326	0.216
		65.5%	59.6%	61.2%	
	Male	49	158	207	
		34.5%	40.4%	38.8%	
Age	30 or less	46	100	146	0.117
		32.4%	25.6%	27.4%	
	31 to 40	43	106	149	
		30.3%	27.1%	28.0%	
	41 to 48	33	97	130	
		23.2%	24.8%	24.4%	
	49 or more	20	88	108	
		14.1%	22.5%	20.3%	
Occupation	Student	24	40	64	0.006
		16.9%	10.2%	12.0%	
	Health related job	19	25	44	
		13.4%	6.4%	8.3%	
	Non health related job	59	173	232	
		41.5%	44.2%	43.5%	
	Self-employed	6	21	27	
		4.2%	5.4%	5.1%	
	Unemployed	30	98	128	
		21.1%	25.1%	24.0%	
	Retired	4	34	38	
		2.8%	8.7%	7.1%	
Region	Northern region	2	3	5	0.962
		1.4%	0.8%	0.9%	

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	Southern region	63	179	242	
		44.4%	45.8%	45.4%	
	Central region	19	48	67	
		13.4%	12.3%	12.6%	
	Eastern region	16	45	61	
		11.3%	11.5%	11.4%	
	Western region	42	116	158	
		29.6%	29.7%	29.6%	
Marital status	Single	33	76	109	0.051
		23.2%	19.4%	20.5%	
	Married	108	292	400	
		76.1%	74.7%	75.0%	
	Divorced	0	19	19	
		0.0%	4.9%	3.6%	
	Widowed	1	4	5	
		0.7%	1.0%	0.9%	
Educational level	Primary school	0	5	5	0.514
		0.0%	1.3%	0.9%	
	Middle school	3	4	7	
		2.1%	1.0%	1.3%	
	High school	29	76	105	
		20.4%	19.4%	19.7%	
	Bachelor's or diploma	98	265	363	
		69.0%	67.8%	68.1%	
	Postgraduate	12	41	53	
		8.5%	10.5%	9.9%	
Monthly income	< 5,000	58	177	235	0.704
		40.8%	45.3%	44.1%	
	5,000-15,000	44	122	166	
		31.0%	31.2%	31.1%	
	15,001-30,000	34	77	111	
		23.9%	19.7%	20.8%	
	>30,000	6	15	21	
		4.2%	3.8%	3.9%	
Do you have children?	No	32	98	130	0.548
		22.5%	25.1%	24.4%	
	Yes	110	293	403	
		77.5%	74.9%	75.6%	
Your relationship with this child	Parent	110	297	407	0.936
		77.5%	76.0%	76.4%	

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	Aunt or uncle	11	32	43	
		7.7%	8.2%	8.1%	
	Don't have a child	21	62	83	
		14.8%	15.9%	15.6%	
Have you ever heard about developmental dysplasia of the hip?	No	13	188	201	0.0001
		9.2%	48.1%	37.7%	
	Yes	129	203	332	
		90.8%	51.9%	62.3%	

P value was considered significant if ≤ 0.05.

Discussion:

The objective of the present study was to assess the awareness and perception of DDH by parents in the kingdom of Saudi Arabia. The findings confirm previous research undertaken in various regions including Saudi Arabia, where knowledge about DDH's risk factors; symptoms; and treatment options remains deficient. For instance, a study carried out in the Aseer region revealed that only 65.6% of pregnant women were aware of DDH, and only 43.5% understood the ways which should be utilized to manage DDH [10]. Similarly, we found that 62.3% of participants had some awareness of DDH mostly through informal means such as family and friends compared to healthcare professional. This reliance on personal networks to obtain health information is the impetus for structured educational interventions identifying parent awareness and understanding of DDH.

Our study's demographic analysis showed that our cohort of participants was largely young and female, which is consistent with other studies that have reiterated the link between gender and the acquisition of health-related knowledge and attitudes. For example, Alqarni et al. found that in general, mothers were more aware of DDH than fathers [10,11]. It could be that the extent to which mothers are less directly involved in health issues has to do with the traditional role caregiving takes, where mothers are more involved in child health issues. In addition, the employment status of participants, a major number of whom are employed in non-health related fields, is a concern regarding health literacy and a source of access to credible information. This observation is also supported by research conducted by Alanazi et al, to suggest community wide educational campaigns should be instituted to achieve improved knowledge of DDH and its management [11].

Our most critical finding was that children were alarmingly delayed on diagnosis of DDH, with just 7.7% diagnosed in the first six months of life. This delay, however, is concerning because early diagnosis is important for optimum management and more favorable outcomes. Previous studies have shown that late presentation of DDH does not infrequently result in more severe problems and less favorable treatment outcome [12]. Some examples include that children diagnosed later are more than likely to need surgical interventions when they might not have had to, according to George et al. [13]. This low level of early diagnoses in our study reflects a widely reported problem in other areas in which a lack of awareness and quick action lingers.

In addition, our results showed that 70.9% of participants were unaware of the causes of DDH, an obstacle to early diagnosis and treatment. This lack of knowledge is consistent with study done in Jordan

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where only 30.1 of Jordanian participants knew there was a link between breech presentation and DDH [14]. Lack of awareness of risk factors by parents can therefore be missed opportunities for early screening and intervention that ultimately effects the long-term health of children affected. Not only is this supported by the fact that 55.2% of our respondents could not adequately describe the treatment modality for DDH, but there is a critical gap in knowledge pertaining to treatment options.

The study's prognostic implications relating to treatment outcomes, though, were also highlighted, with only 21.8 percent reporting complete healing after intervention. This is consistent with literature indicating that treatment success rates can vary considerably depending on when diagnosis is made and the degree of disease at presentation [15]. Several factors that are reported to influence treatment failure rates in children with DDH, and others that Lin et al. [16] add end, including initial approach to management and presence of associated conditions. Finally, the large percentage of respondents (55%) who were unsure about treatment outcomes further highlights that the communication problem between health care provider and parents of DDH patients must be solved. While the finding is very concerning, it is important to note the limitation of the present study. For instance, depending on self-reported data might involve the biases in that is that participant may overestimate their knowledge or awareness of DDH. Also, limitations in cross sectional design do not permit establishing causalities between demographic factors with the levels of awareness. Longitudinal studies of the evolution of knowledge and attitudes toward DDH in parents are possible in the future, perhaps providing more complete views of how knowledge and attitudes about DDH change over time. To this end, the study also had a sample that was confined to KSA, thus not capturing the awareness levels in other regions or in other populations.

Conclusion:

The present study highlights the importance of increased awareness and knowledge about developmental dysplasia of the hip among the parents in Saudi Arabia. The results show large knowledge gaps in risk factors, signs and symptoms and treatment options, with the potential to have deeply important implications for early diagnosis and prevention. Therefore, it is essential to adopt intended educational campaigns targeted to engage health care providers and the larger community. By learning more about DDH we can reduce the long-term consequences of a delayed diagnosis and treatment and increase health outcome for children living with this condition.

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Ethical approval:

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

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Conflict of interests:
The authors declare no conflict of interest.

Informed consent:
Written informed consent was acquired from each individual study participant.

Data and materials availability:
All data associated with this study are present in the paper.

References:

1. Para A, Batko B, Ippolito J, Hanna G, Edobor-Osula F. Developmental dysplasia of the hip: How does social media influence patients and caregivers seeking information? Children. 2021;8(10).
2. 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. Journal of Pediatric Orthopaedics. 2021;41(6):e392–7.
3. Alotaibi TN, Jawadi AH, Alghamdi AA, Aldeghaither SA, Alhandi AA. Knowledge, attitude, and practice of primary care physicians about developmental dysplasia of the hip in a tertiary referral hospital in Riyadh, Saudi Arabia. Journal of Musculoskeletal Surgery and Research. 2021;5(4):273–9.
4. Contro E, Larcher L, Lenzi J, Benfenati A, Magini GM, Galeati G, et al. Prenatal screening for developmental displacement of the hip: The buddha (pre-birth ultrasound for developmental displacement of the hip assessment) study. Diagnostics. 2021;11(5).
5. Sadat-Ali M. Developmental Dysplasia of the Hip (DDH) in Saudi Arabia: Time to Wake up. A Systematic Review (1980-2018). Open Journal of Epidemiology. 2020;10(02):125–31.
6. Alrashdi N, Alotaibi M, Alharthi M, Kashoo F, Alanazi S, Alanazi A, et al. Incidence, Prevalence, Risk Factors, and Clinical Treatment for Children with Developmental Dysplasia of the Hip in Saudi Arabia. A Systematic Review. Journal of Epidemiology and Global Health. 2024;
7. Alqarni MM, Shati AA, Al-Qahtani YA, Alhifzi WS, Alhifzi WS, Saleh RSA, et al. Perception and awareness about developmental dysplasia of the hip in children among pregnant ladies in the aseer region, southwestern saudi arabia. Healthcare (Switzerland). 2021;9(10).
8. Mohammed Alshahrani K, Alsiddiky A, Mohammed Alamro S, Abdulkhaliq Alqarni Assessing A, Abdulkhaliq Alqarni A. Assessing the level of DDH knowledge among parents in Riyadh city in Saudi Arabia. Iaim. 2018;5(2):141–9.
9. Knired Z, Zogel B, Darraj H, Asiri R, Hennawi YB, Alhazmi SM. Community Awareness About Developmental Dysplasia of the Hip (DDH) in the Western and Southern Regions of Saudi Arabia. Cureus. 2024;
10. Alqarni, M., Shati, A., Alqahtani, Y., Alhifzi, W., Alhifzi, W., Saleh, R., … & Alshehri, M. (2021). Perception and awareness about developmental dysplasia of the hip in children among

ISSN:1624-1940
http://magellanes.com/

pregnant ladies in the Aseer region, southwestern Saudi Arabia. Healthcare, 9(10), 1384. https://doi.org/10.3390/healthcare9101384

11. Alanazi, M., Abokhesheim, W., Saqer, R., Alasmari, R., & Alotaibi, R. (2022). 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. https://doi.org/10.7759/cureus.30465
12. Anuar, R., Mohd-Hisyamudin, H., Ahmad, M., & Zulkiflee, O. (2015). The economic impact of managing late presentation of developmental dysplasia of hip (DDH). Malaysian Orthopaedic Journal, 9(3), 40-43. https://doi.org/10.5704/moj.1511.006
13. George, J., Kulkarni, V., Bellemore, M., Little, D., & Birke, O. (2020). Importance of early diagnosis for developmental dysplasia of the hip: a 5-year radiological outcome study comparing the effect of early and late diagnosis. Journal of Paediatrics and Child Health, 57(1), 41-45. https://doi.org/10.1111/jpc.15111
14. Alkouz, F. (2023). Evaluation of the community's awareness of developmental dysplasia of the hip: a cross-sectional study in Jordan. Cureus. https://doi.org/10.7759/cureus.47474
15. Zhang, G., Li, M., Qu, X., Cao, Y., Liu, X., Luo, C., … & Zhang, Y. (2020). Efficacy of closed reduction for developmental dysplasia of the hip: midterm outcomes and risk factors associated with treatment failure and avascular necrosis. Journal of Orthopaedic Surgery and Research, 15(1). https://doi.org/10.1186/s13018-020-02098-3
16. Lin, A., Siddiqui, A., Lai, L., & Goldstein, R. (2021). An inverted acetabular labrum is predictive of Pavlik harness treatment failure in children with developmental hip dysplasia. Journal of Pediatric Orthopaedics, 41(8), 479-482. https://doi.org/10.1097/bpo.0000000000001916