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KNOWLEDGE AND AWARENESS LEVEL ABOUT DEVELOPMENTAL DYSPLASIA OF THE HIP AMONG THE ADULT SAUDI POPULATION

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Abstract

Background: Developmental dysplasia of the hip (DDH) is the most prevalent congenital orthopedic issue. Factors like prenatal breech presentation, familial history, and female gender contribute to its occurrence. Early screening and detection of hip structural abnormalities are crucial to improve outcomes and reduce problems related to (DDH). The study aimed to assess the level of knowledge about developmental dysplasia of the hip among the Saudi population. **Methodology:** This cross-sectional study used convenience sampling to gather data from individuals spread throughout several locations in Saudi Arabia between July to December 2024. The study includes Saudi Arabian adults aged 18 years and above. Regardless of their existing knowledge or awareness of (DDH), participants were selected based only on their willingness to participate and complete questionnaires. The study excluded Saudi citizens under 18 years old and non-Saudi residents of Saudi Arabia. The sample size required to get a precision of 5% at a 95% confidence level is at least 385, according to calculations made using Raosoft's sample size calculator tailored for the Saudi Arabian population. **Results:** The purpose of this study was to study the level of knowledge of the Saudi population regarding developmental dysplasia of the hip (DDH), 554 participants majority being young adults average age 30.7 years old with majority being females (64.4%). Sixty one percent had no awareness of DDH, an alarming lack of knowledge which could prevent early diagnosis and treatment. About 39 percent said they had some knowledge, nearly 40 percent were unclear on what it meant. Additionally, 65.5% were uncertain if DDH is equal in impact between genders, 55.4% are undecided on the impact of swaddling and 24.8% are convinced that swinging a baby strides out the effects of DDH. The results showed only 3.2 per cent had high knowledge, a further 72.2 per cent had low awareness – evidence that there are important educational initiatives required. **Conclusion:** The study emphasizes that almost 60 percent of respondents were oblivious to the condition known as developmental dysplasia of the hip (DDH) and

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its prevalent risk factors. Despite the relative education of their demographic, the findings on this suggest considerable knowledge gaps, especially for swaddling implications and DDH epidemiology.

Keywords: knowledge, awareness, Saudia Arabia, DDH

Introduction:

Developmental dysplasia of the hip (DDH) is defined as the structural abnormalities in the hip, which may result in its dislocation or instability [1]. In comparison to other congenital orthopedic disorders' prevalence, DDH presents as the most common one [2]. Some risk factors associated with DDH include the infants' prenatal breech presentation, family history, and being a female. Early screening and identification of DDH is the key to obtain better outcomes and prevent further complications [3]. According to reports, the incidence of DDH is around 3-4 cases per 1000 live births globally with prevalence ranging from 3.1- 4.9 per 1000 live births in Saudi Arabia [4,5]. Each newborn needs to be examined for DDH, but it is especially crucial to screen for risk factors such as breech position, female infants, primiparity, oligohydramnios, a positive family history, and tight swaddling [6]. Including 412 participants A study about knowledge and awareness of DDH was carried out in Riyadh city in 2022 more than half the participants in the study knew nothing about DDH and its risk factors which included female gender Breech presentation, family history these were unknown to 63.60%,63%, 58% in order. and 72.8% had a low-level knowledge of DDH. 42.70% of participants were unaware of DDH complications, higher knowledge scores were found in female participants, those with higher education levels, healthcare professionals, parents of children who have been screened, and participants having a first-degree relative with DDH [7]. In 2023 A second study about knowledge and awareness of DDH was carried out in Jordan with 1013 participants, revealing that 37.8% of participants had a poor knowledge level, 48.9% showed a moderate knowledge level and 13.3% had a high knowledge and awareness level regarding the DDH. The greatest number of participants who had a high and moderate level of knowledge and awareness were between 25-40, 33.9% of participants obtained their knowledge from relatives and personal experience, on the other hand, awareness campaigns had the lowest score as a source of information with only 2.9% coming from them [8]. Another cross-sectional study in 2023 was conducted to determine the knowledge and awareness level among the adult Saudi population toward DDH, from a total of 948 participants in the study. 63.6% were aware of DDH. The most assessed information source was self-education (16.8%), then social media (14.9%). In general, the Participant's knowledge was weak with a mean score (3.2 out of 9) representing 35.6%. Nonetheless, those who were younger, and female had higher levels of knowledge [9]. A more recent survey held in 2024 with 1,232 participants evaluating the level of knowledge regarding DDH in the southern and western parts of KSA showed that: 86.4% had a low understanding of the causes of DDH, 60% had a poor knowledge regarding DDH in general. 40% however had a good knowledge. Respondents with greater monthly income, mothers, and those who got their information from social media were the respondents with higher awareness levels. Though 69% agreed that receiving therapy early was preferable. 43.1% were unsure about the best treatment plan for DDH [10]. We chose to write this research paper on dysplasia of the hip among children to assess the knowledge of the Saudi population and to make the public more aware. In most of the articles, we noticed a great number of people didn't have enough knowledge about dysplasia of the hip among children, especially in older participants, that why we are encouraged doing the topic. So, our study aimed to assess the knowledge and awareness of developmental dysplasia of the hip among the Saudi population.

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Materials and methods:

Study Design and Setting:

This cross-sectional study was conducted between July - December 2024 using the convenience sampling method to gather data from participants residing in different regions in Saudi Arabia.

Subject: Participants, recruitment and sampling procedure:

The population of Saudi Arabia was the study's participants, and they were requested to submit responses to the online survey questionnaire.

To have participants from all regions of KSA the sample recruiting approach depended on different social media platforms.

Sample size:

Using Raosoft sample size calculators based on the population of Saudi Arabia, the minimum sample size required to achieve a precision of 5% with a 95% confidence interval was 385 participants.

using the formula:

n = P(1-P) * Zα 2 / d 2 with a 95% confidence level.

n: Calculated sample size.

Z: The z-value for the selected level of confidence (1- a) = 1.96

P: An estimated prevalence of knowledge.

Q: (1 – 0.50) = 50%, i.e., 0.50.

D: The maximum acceptable error = 0.05.

Inclusion and Exclusion Criteria:

This study included all Saudi males and females, ages above 18 years old, from all provinces of the Kingdom of Saudi Arabia, the general population who have or do not have knowledge about DDH, and subjects who would agree to participate in this study and complete the questionnaire

We excluded the non-Saudi residents in KSA, the Saudi population aged less than 18 years old.

Method for data collection and instrument (Data collection Technique and Tools):

The responses that participants provided to the survey questions served as the source of data. this questionnaire was used from other relevant studies to our subject [7,11]. we used a four-part questionnaire. In the first section, the study's purpose and consent question are briefly described. Part 2 contains demographic information, including age, marital status, living area, educational background, and income. In Part 3, the participants questioned regarding their awareness and general understanding of DDH, in part 4 the participants asked about their knowledge about the causes of DDH, its treatment, prognosis, and complications.

Scoring system:

In all, the questionnaire consisted of 32 questions given to the participants in the research to assess their level of awareness and knowledge about DDH. 10 demographic questions, 11 for awareness, 11 for knowledge. One point is given to the correct answer, no points are given to wrong answers or the answer "I don't know". For scoring we utilized the Likert scale (dichotomous) and multiple-answer questions, the maximum score was 33 and divided as follows: the original bloom cut-off point, 100%-80%, 79%-60%, and 59%, and the participants divided into 3 groups depending on their scores.

Knowledge scores varied from 0 to 16 and participants were classified into:

participants who scored above 13 were considered as high-level knowledge, participants who scored

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between 10-13 were considered as moderate knowledge level and participants who scored 9 or lower were considered as low-level knowledge.
awareness score varied from 0 to 17 and participants were classified to: participants who scored above 13 were considered as high-level awareness, participants who scored between 11 and 13 were considered as moderate awareness level and participants who scored less than 11 were considered as low-level awareness.

Pilot test:
We did a questionnaire and distributed it to a small sample of 20 person, to assess the awareness and knowledge of public dysplasia among adult the questionnaire included question that measures their understanding of the condition, symptoms, risk factors, and how importance get early detection and treatment. Data collected from the pilot test was excluded from the study data.

Analyzes and entry method:
The computer's "Microsoft Office Excel Software" (2016) for Windows program was used to enter data. After that, data was moved to be statistically analyzed using the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

Results:

Table (1) displays various demographic parameters of the participants with a total number of (554). According to data, the demographic is primarily young with an average age of 30.7 years and almost 55 percent are between the ages of 23 and 40. Notably, if gender dynamics played a role, then gender representation is skewed towards females at 64.4%. Forty percent of participants are expatriates, the remaining 94.2% are Saudi nationals, a cultural context within which this study is embedded. About half of the participants show they are unmarried and about 68.6% are parents indicating a demographic composed of a family type. Participants are geographically from Makkah and Riyadh, two main urban areas in Saudi Arabia. Amazingly, those holding a bachelor's degree are also commendable as 64.1% of them have educational attainment. In addition, income distribution shows that there is a large proportion of the participants who earn less than 3,000 SAR a month, which could point to problems of money in this group.

Table (1): Sociodemographic characteristics of participants (n=554)

Parameter		***No.***	***Percent (%)***
Age (Mean:30.7, STD:11.3)	Less than 23	139	25.1
	23 to 25	146	26.4
	26 to 40	165	29.8
	More than 40	104	18.8
Gender	Female	357	64.4
	Male	197	35.6
Nationality	Saudi	522	94.2
	Non-Saudi	32	5.8
Marital status	Single	323	58.3

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	Married	215	38.8
	Divorced	15	2.7
	Widowed	1	.2
Do you have children?	No	174	31.4
	Yes	380	68.6
Relationship (n=380)	Father	57	15.0
	Mother	75	19.7
	other	248	65.3
Region	Al Baha	59	10.6
	Jawf	1	.2
	Riyadh	126	22.7
	Eastern Province	95	17.1
	Al Qassim	3	.5
	Madinah	55	9.9
	Tabuk	4	.7
	Jizan	9	1.6
	Hail	3	.5
	Aseer	11	2.0
	Makkah	176	31.8
	Najran	12	2.2
Educational level	Primary school	5	.9
	Middle school	7	1.3
	High school	89	16.1
	Diploma	69	12.5
	Bachelor	355	64.1
	High degree	29	5.2
Profession	Student	206	37.2
	Health care worker	52	9.4
	Non-health care worker	134	24.2
	Freelancer	20	3.6
	Unemployed	107	19.3
	Retired	35	6.3
Monthly income	Less than 3000	268	48.4
	3000-10,000	139	25.1
	10,000-20,000	95	17.1
	20,000-30,000	31	5.6
	More than 30,000	21	3.8

As shown in figure 1, Notable about reviewing the data as it pertains to public understanding of developmental dysplasia of the hip (DDH) from a total sample of 554 respondents is that the majority, or 45.7 percent (253 individuals), identified DDH as a hip disorder that permits the hip joint to become partially or completely dislocated. Instead, the condition was identified by 14.8% (82 individuals) as one of the head of the thighbone slipping in relation to the rest of the bone. A worrying amount of people, 39.5% of the respondents or 219, were actually unsure, choosing "I don't know" as their answer.

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Figure (1): Illustrates the definition of DDH among participants.

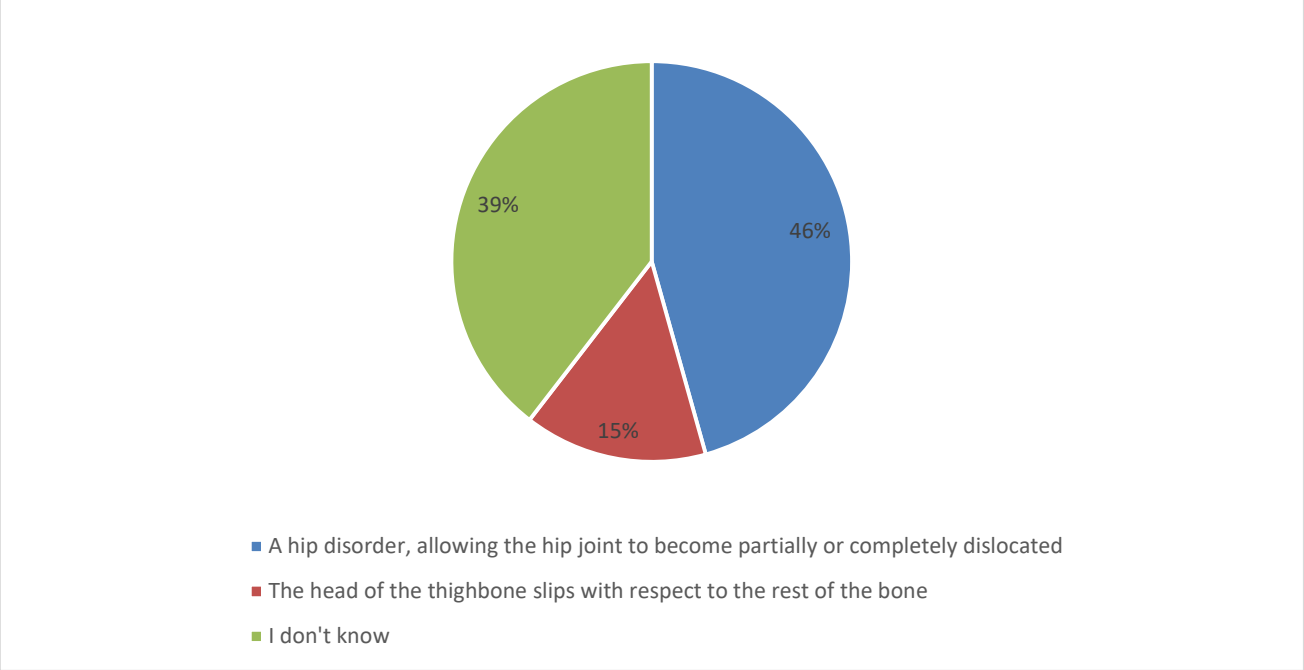

Table 2 presents a comprehensive data of the awareness and understanding of developmental dysplasia of the hip (DDH) of a sample's population of 554 individuals. Respectfully, a substantial majority — 61 percent — claimed not to know DDH, meaning there is an enormous hole in that knowledge, which could impede early recognition and therapy. About 39 per cent of respondents said they had knowledge of DDH, but nearly 40 per cent could not say what it meant, indicating there could be a lack of clarity that can foster misconceptions. This highlights the importance to communicate verifiable, evidence based medical information to these platforms. The data also shows significant ambiguity over how DDH presentation and management are presented and managed, including high levels of respondent uncertainty surrounding DDH symptoms, pain levels and the preventability of DDH.

Table (2): Parameters related to awareness about developmental dysplasia of the hip (DDH) (n=554).

Parameter		***No.***	***Percent (%)***
Do you know about DDH?	No	338	61.0
	Yes	216	39.0
Which one of the following best describes developmental dysplasia of the hip?	A hip disorder, allowing the hip joint to become partially or completely dislocated	253	45.7
	The head of the thighbone slips with respect to the rest of the bone	82	14.8
	I don't know	219	39.5
From where you knew about DDH?	Affected member of the family	32	5.8

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*	From doctor	61	11.0
	From social media	119	21.5
	From friend	55	9.9
	Self-education	96	17.3
	I don't know	278	50.2
Do you know anyone with developmental dysplasia of the hip?	No	415	74.9
	Yes	53	9.6
	I don't know	86	15.5
Do you have children with DDH?	No	284	51.3
	Yes	23	4.2
	I don't know	20	3.6
	I don’t have children	227	41.0
how old was your child at the time of diagnosis?	From birth to six months	12	2.2
	Six months to one year	4	.7
	Older than one year	7	1.3
	I don’t have a diagnosed child	531	95.8
Do you have a first-degree relative with DDH?	No	399	72.0
	Yes	23	4.2
	I don't know	132	23.8
How do you think a child with DDH will present? *	Leg length discrepancy	222	40.1
	Limited range of motion	177	31.9
	Hip click when walking	97	17.5
	Unable to walk	148	26.7
	Pain	123	22.2
	I do not know	191	34.5
Do you think a child with DDH could walk?	No	102	18.4
	Yes	238	43.0
	I don't know	214	38.6
Is DDH painful to the child?	No	53	9.6
	Yes	252	45.5
	I don't know	249	44.9
Do you think the disease is preventable?	No	44	7.9
	Yes	250	45.1
	I don't know	260	46.9

Results may overlap

As shown in figure (2), Insights into the linkage of the swaddling with dislocation of the hip joint among a total sample of 554 cases are presented. Importantly, 104 participants, or about 18.8%, held the opposite, i.e. that swaddling does not lead to dislocation, while 143 enjoyed about 25.8 per cent, that it does. Surprisingly, the swaddling was associated with hip joint dislocation in a large majority of 307 respondents, or 55.4% who were unsure of what was the implication.

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Figure (2): Illustrates if swaddling leads to dislocation of hip joint among participants.

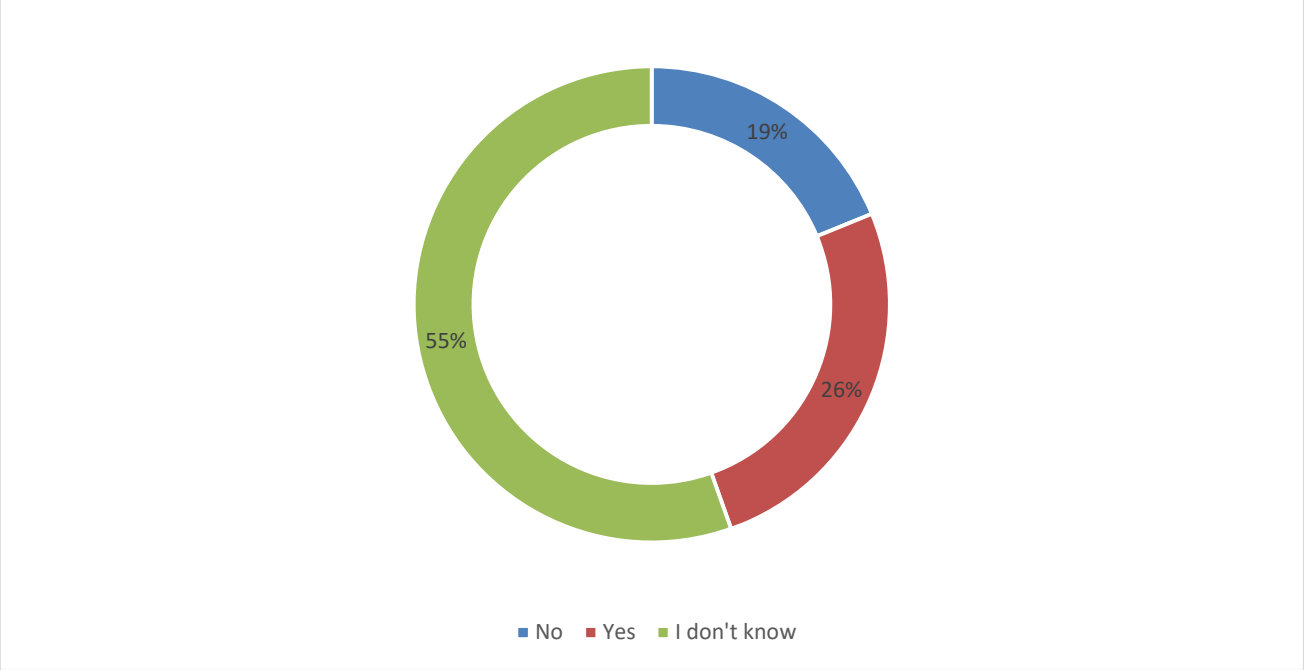

Table 3 presents data from the participants that provide crucial information regarding the gaps in the knowledge that participants possess about the developmental dysplasia of the hip (DDH), and the needed education for them. As many as 65.5 percent of respondents were unsure whether DDH affects males and females equally, clarifying the surprising lack of awareness of its epidemiological aspects. In addition, more than half (55.4%) were unsure whether swaddling leads to dislocation of the hip joint, indicating the lack of clear guidelines for infant care practices. The fact that a majority still (93%) believes in early treatment in improving outcomes is interesting, as the sentiment aligns with clinical recommendations, but perceptions of treatment options vary based on the age of the child. Participants' belief were mixed regarding what contributes to treatment decisions that primary attributed the condition served and age. Complications secondary to DDH were noted in 68.4% of patients.

Table (3): participants' knowledge about developmental dysplasia of the hip (DDH) (n=554).

Parameter		***No.***	***Percent (%)***
Males and females are equally affected by developmental dysplasia of the hip?	Yes	74	13.4
	No, it occurs more in females	84	15.2
	No, it occurs more in males	33	6.0
	I don't know	363	65.5
Does Swaddling lead to dislocation of the hip joint?	No	104	18.8
	Yes	143	25.8
	I don't know	307	55.4
Do you think that mode of delivery is related	No	110	19.9

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to DDH?	Yes	235	42.4
	I don't know	209	37.7
Does Developmental dysplasia of the hip commonly occur in babies with breech presentation?	No	49	8.8
	Yes	162	29.2
	I don't know	343	61.9
What do you think determine the treatment of DDH?	Severity of the disease	171	30.9
	Age	177	31.9
	Presence of complications	151	27.3
	Weight	33	6.0
	Gender	22	4.0
What do you think about the treatment before 6 months?	Observe the child	86	15.5
	Physiotherapy	141	25.5
	Conservative (Pavlik harness and abduction splint)	239	43.1
	Surgical correction (Closed Vs open reduction)	88	15.9
What do you think is the treatment if the child is above 6 months?	Observe the child	34	6.1
	Physiotherapy	166	30.0
	Conservative (Pavlik harness and abduction splint)	184	33.2
	Surgical correction (Closed Vs open reduction)	170	30.7
What do you think about early treatment?	Better	515	93.0
	No difference	28	5.1
	Late treatment better	11	2.0
What do think is the prognosis after treatment?	Completely healed	253	45.7
	Partial healing with limping	292	52.7
	No heal	9	1.6
Do you think developmental dysplasia of the hip causes complications?	No	35	6.3
	Yes	379	68.4
	I don’t know	140	25.3
What of the following do you think is a complication of DDH? *	Limbing	399	
	Hip pain	322	
	Inability to walk	278	
	Back pain	239	
	Lower limb discrepancy	302	
	Osteoarthritis	161	
	DDH Doesn’t cause complications	28	

Results may overlap

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Table 4 presents data from a sample population illustrating the different degrees of knowledge pertaining to developmental dysplasia of the hip (DDH). Yet, surprisingly, only 3.2 percent of respondents score high in their level of knowledge about the topic, suggesting a huge disparity in awareness and face. Furthermore, 29.4 percent of the sample has moderately knowledge which means that although some people have a decent knowledge, there is plenty to learn. A disquieting percentage of 67.3 have low knowledge levels, alarmingly, and can hinder early detection and effective management of DDH.

Table (4): Shows knowledge about developmental dysplasia of the hip (DDH) score results.

	Frequency	**Percent**
High knowledge level	18	3.2
Moderate knowledge	163	29.4
Low knowledge level	373	67.3
Total	554	100.0

As shown in the data presented in Table 5, a troubling trend of public knowledge and awareness of developmental dysplasia of the hip (DDH) becomes clear. There is 72.2% respondents with a low awareness level, 21.7% reporting moderate awareness, but only 6.1% exhibited the high awareness level.

Table (5): Shows awareness about developmental dysplasia of the hip (DDH) score results.

	Frequency	**Percent**
High awareness level	34	6.1
Moderate awareness	120	21.7
Low awareness level	400	72.2
Total	554	100.0

Table (6) shows that awareness about DDH has statistically significant relation to gender (P value=0.020), educational level (P value=0.048), and profession (P value=0.0001). It also shows statistically insignificant relation to age, nationality, marital status, if participants have children, and monthly income in SAR.

Table (6): Relation between awareness about DDH and sociodemographic characteristics.

Parameters		***Awareness level***		***Total (N=554)***	***P value****
		High or moderate awareness	**Low awareness level**		
Gender	Female	111	246	357	0.020
		72.1%	61.5%	64.4%	
	Male	43	154	197	
		27.9%	38.5%	35.6%	

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Age	Less than 23	39	100	139	0.259
		25.3%	25.0%	25.1%	
	23 to 25	49	97	146	
		31.8%	24.3%	26.4%	
	26 to 40	42	123	165	
		27.3%	30.8%	29.8%	
	More than 40	24	80	104	
		15.6%	20.0%	18.8%	
Nationality	Saudi	147	375	522	0.441
		95.5%	93.8%	94.2%	
	Non-Saudi	7	25	32	
		4.5%	6.3%	5.8%	
Marital status	Single	97	226	323	0.521
		63.0%	56.5%	58.3%	
	Married	53	162	215	
		34.4%	40.5%	38.8%	
	Divorced	4	11	15	
		2.6%	2.8%	2.7%	
	Widowed	0	1	1	
		0.0%	0.3%	0.2%	
Do you have children?	No	56	118	174	0.119
		36.4%	29.5%	31.4%	
	Yes	98	282	380	
		63.6%	70.5%	68.6%	
Educational level	Primary school	2	3	5	0.048
		1.3%	0.8%	0.9%	
	Middle school	0	7	7	
		0.0%	1.8%	1.3%	
	High school	35	54	89	
		22.7%	13.5%	16.1%	
	Diploma	14	55	69	
		9.1%	13.8%	12.5%	
	Bachelor's degree	96	259	355	
		62.3%	64.8%	64.1%	
	Postgraduate degree	7	22	29	
		4.5%	5.5%	5.2%	
Profession	Student	76	130	206	0.0001
		49.4%	32.5%	37.2%	
	Health care worker	24	28	52	
		15.6%	7.0%	9.4%	
	Non-health care worker	21	113	134	
		13.6%	28.2%	24.2%	
	Freelancer	4	16	20	
		2.6%	4.0%	3.6%	

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	Unemployed	20	87	107	
		13.0%	21.8%	19.3%	
	Retired	9	26	35	
		5.8%	6.5%	6.3%	
Monthly income in SAR	Less than 3000	79	189	268	0.930
		51.3%	47.3%	48.4%	
	3000-10,000	36	103	139	
		23.4%	25.8%	25.1%	
	10,000-20,000	26	69	95	
		16.9%	17.3%	17.1%	
	20,000-30,000	8	23	31	
		5.2%	5.8%	5.6%	
	More than 30,000	5	16	21	
		3.2%	4.0%	3.8%	

P value was considered significant if ≤ 0.05.

Table (7) shows that knowledge about DDH has statistically significant relation to gender (P value=0.011), age (P value=0.003), marital status (P value=0.001), if participants have children (P value=0.0001), and profession (P value=0.0001). It also shows statistically insignificant relation to nationality, educational level, and monthly income in SAR.

Table (7): Knowledge about DDH in association with sociodemographic characteristics.

Parameters		***Knowledge level***		***Total (N=554)***	***P value****
		High or moderate knowledge	**Low knowledge level**		
Gender	Female	130	227	357	0.011
		71.8%	60.9%	64.4%	
	Male	51	146	197	
		28.2%	39.1%	35.6%	
Age	Less than 23	44	95	139	0.003
		24.3%	25.5%	25.1%	
	23 to 25	63	83	146	
		34.8%	22.3%	26.4%	
	26 to 40	52	113	165	
		28.7%	30.3%	29.8%	
	More than 40	22	82	104	
		12.2%	22.0%	18.8%	
Nationality	Saudi	174	348	522	0.180
		96.1%	93.3%	94.2%	
	Non-Saudi	7	25	32	
		3.9%	6.7%	5.8%	
Marital status	Single	127	196	323	0.001
		70.2%	52.5%	58.3%	
	Married	50	165	215	

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		27.6%	44.2%	38.8%	
	Divorced	4	11	15	
		2.2%	2.9%	2.7%	
	Widowed	0	1	1	
		0.0%	0.3%	0.2%	
Do you have children?	No	75	99	174	0.0001
		41.4%	26.5%	31.4%	
	Yes	106	274	380	
		58.6%	73.5%	68.6%	
Educational level	Primary school	3	2	5	0.195
		1.7%	0.5%	0.9%	
	Middle school	2	5	7	
		1.1%	1.3%	1.3%	
	High school	32	57	89	
		17.7%	15.3%	16.1%	
	Diploma	15	54	69	
		8.3%	14.5%	12.5%	
	Bachelor's degree	122	233	355	
		67.4%	62.5%	64.1%	
	Postgraduate degree	7	22	29	
		3.9%	5.9%	5.2%	
Profession	Student	86	120	206	0.0001
		47.5%	32.2%	37.2%	
	Health care worker	25	27	52	
		13.8%	7.2%	9.4%	
	Non-health care worker	29	105	134	
		16.0%	28.2%	24.2%	
	Freelancer	7	13	20	
		3.9%	3.5%	3.6%	
	Unemployed	25	82	107	
		13.8%	22.0%	19.3%	
	Retired	9	26	35	
		5.0%	7.0%	6.3%	
Monthly income in SAR	Less than 3000	93	175	268	0.332
		51.4%	46.9%	48.4%	
	3000-10,000	50	89	139	
		27.6%	23.9%	25.1%	
	10,000-20,000	26	69	95	
		14.4%	18.5%	17.1%	
	20,000-30,000	7	24	31	
		3.9%	6.4%	5.6%	
	More than 30,000	5	16	21	
		2.8%	4.3%	3.8%	

P value was considered significant if ≤ 0.05.

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Discussion:
The purpose of the present study was to assess the knowledge level related to developmental dysplasia of the hip (DDH) among the Saudi population, and to discover significant gaps in their awareness and understanding. We found less than 3.2% know a lot about DDH while little more than 61% reported no knowledge at all of DDH. This is consistent with previous work suggesting that a dearth of public awareness about DDH and its risk factors exists. For example, a study in Riyadh reported that half of participants lacked knowledge of such risk factors as breech presentation (63.6%) and family history (58%) [12]. Like Woolacott et al [13] a systematic review, it was highlighted that early screening and education are important to improve treatment outcomes and that many parents are unaware of the implications of DDH. Demographic analysis of our study indicated knowledge scores were higher in female, healthcare professional and educated participants. In line with Zamborský et al [14]. work, we find that awareness of DDH depends on educational background, more specifically, that parents are more likely to be aware of DDH if they have some education. Our results also showed that 72.2% of the participants had very low awareness levels, which is worrying, considering the need for early detection in preventing DDH with long term complications. The literature speaks to the same thing, studies have shown that untreated DDH can result to severe outcomes such as osteoarthritis and impaired mobility [15]. Regarding particular misconceptions, we observed that 65.5% of respondents were uncertain whether DDH effects men and women equally, and 55.4% were unaware of the dangers of the practice of swaddling. This is akin to the findings of Jorgensen et al [12] that many adults with untreated DDH had limited comprehension of the condition and what it meant. This further supports the confusion surrounding the epidemiology of DDH that Jacobsen et al [16]. have observed, in that public knowledge often does not reflect the actual prevalence and aetiological risk factors for DDH. In addition, 68.4 per cent of respondents could name the DDH complications, yet were unclear about the details of what would be done for treatment. Of course, that is causing us concern—and it raises the question of whether we don't yet know enough to deliver the urgently needed response. Engesæter et al [17] learned that a lack of awareness on what treatment options are available can result in delay before seeking care which ultimately affects patient outcome. This is a good thing because it shows that 93% of our respondents believe that early treatment makes a difference, but it also highlights the fact that we all need to know what early treatment means and what options are available. We also acknowledge the limitations of our study. With the large sample size of 554 participants we used, the cross-sectional design restricts any conclusions regarding the factors that cause knowledge of DDH. Furthermore, self-reported DDH data likely captures bias from over reporting of knowledge or awareness of DDH. As other studies have previously reported, self-reported measures are also being found to be challenging to use to assess health literacy [18]. Additionally, the use of convenience sampling may not reflect fully the population of Saudi Arabia especially from rural areas where access to information would be far different than in the urban centers.

Conclusions:
In conclusion, this study highlights a critical lack of awareness regarding developmental dysplasia of the hip (DDH) among the Saudi population, with over 60% of participants unaware of the condition and its associated risk factors. The findings indicate that despite a relatively educated demographic, significant knowledge gaps exist, particularly concerning the implications of swaddling practices and the epidemiology of DDH. Notably, while many participants recognized the importance of early treatment, misconceptions about treatment based on the child's age could lead to delays in seeking care. The correlation between higher education levels and increased awareness suggests that targeted educational initiatives could effectively enhance knowledge about DDH, particularly among less

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informed groups. Addressing these gaps is essential for improving early detection and intervention, ultimately preventing long-term complications. Future efforts should focus on developing standardized educational materials and utilizing diverse outreach strategies to foster a better understanding of DDH within the community.

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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.

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