The knowledge and attitudes of the primary care physicians on developmental dysplasia of the hip

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ABSTRACT

Objectives: For the prevention and early diagnosis of developmental dysplasia of the hip (DDH), a detailed clinical screening of the newborn performed by a primary care (PC) physician is recommended as a standard practice throughout the most western countries. We aimed to determine the knowledge and attitudes of the PC physicians towards DDH, and to develop further educational and training programs, according to the results obtained from the study.

Methods: The study was a pre- and post-test with a cross-sectional design. In winter of 2005, the participants included 102 PC physicians from 20 primary health care centers in Kahramanmaras, Turkey. A structured questionnaire was prepared consisting of 28 statements on medical, practical, and traditional knowledge and attitudes concerning DDH.

Results: There was a significant difference between the pre-test (71.47 ± 9.92) and post-test scores (78.85 ± 12.86) of participants (p=0.000). Of the participants, 83 (81.4%) before, and 93 (91.2%) after the lecture, thought that DDH is a preventable disease. Prior to the lecture, only 27.5% of the physicians were aware of the wrong traditional attitudes that are considered as risk factors for DDH.

Conclusion: The knowledge and attitudes of PC physicians on DDH needs to be improved by providing continuous education programmes.

Saudi Med J 2007; Vol. 28 (9): 1430-1434

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Received 5th September 2006. Accepted 31st March 2007.

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Developmental dysplasia of the hip (DDH) refers to a spectrum of anatomical abnormalities of the hip joint arising from a deviation in normal hip development. It includes partial or complete displacement of the femoral head from the acetabulum during the infantile growth period, and includes acetubular dysplasia.[1,2] Although the problem is resolved spontaneously in the first several months of life in most affected infants, persistent DDH may result to chronic pain and gait abnormalities.[3] The etiology of DDH is multifactorial, involving hormonal, positional, environmental, and genetic factors. Its risk factors are positive family history, breech position, female gender, primiparity, oligohydramnios, multiple gestation, high birthweight (≥ 4000 g), postmaturity (≥ 42 weeks), associated abnormalities (torticollis, metatarsus adductus), and swaddling.[4-7] The DDH is a preventable condition. The basic principle of primary prevention is to keep the neonate in a position, where hip and knee joints can be freely flexed and extended in the absence of persistent tension of the iliopsoas and hamstring muscles. In this context, educating health care providers and families on neonatal care would reduce the incidence of DDH.[8-10] The development of every newborn should be observed closely with sequential examinations, and if needed, by imaging techniques during the first year, for the early diagnosis of DDH.[11,12] Its diagnosis is not easy with clinical examination. The newborn with dislocation has no pain. During the first 2 months, the hips should be evaluated carefully with Ortolani and Barlow tests. The sensitivity is only 60%, and the specificity is 100%, for these tests, in the best hands.[13] After the second month, a decreased hip abduction, asymmetrical gluteal or thigh skin fold, apparent shortening of the thigh, and proximal location of the greater trochanter are searched while examining the infants.[5,6] Early identification of the affected infants results in an important optimal outcome. Routine neonatal screening

of DDH was introduced in the 1960s. Components of the newborn musculoskeletal screening include a concise history, complete developmental assessment, and thorough physical examination. The health care provider (such as physician, pediatric nurse practitioner, assistant physician, or physical therapist) must separate the normal conditions related to the intrauterine positioning, from the more serious abnormalities that may require early intervention and treatment.[14] The overall objective of the related screening is to detect and to treat, at an early stage, those babies considered to have a high risk for this condition.[15] Several reports have demonstrated that health care providers properly trained for the detection of hip abnormalities in newborns have fewer late diagnoses.[16,17] A detailed and repeated clinic examination of the newborn performed by a well-trained health care provider is recommended as a standard practice throughout most western countries.[18,19]

Our objectives are to determine the knowledge and attitudes of primary care (PC) physicians towards DDH before and after a structured lesson, and to develop further educational and training programs according to the results obtained from the study.

Methods. At the time the study was undertaken, between November and December 2005, 228 PC physicians were working in 20 primary health care centers in Kahramanmaras city municipality, Turkey. With the cooperation of the City Health Administration, the meeting session was planned, and all of the PC physicians were invited to participate in the study. One hundred and two (44.7%) PC physicians, without any obstacle due to the intensity of their work, have filled the pre-test and post-test questionnaires, and listened to the lesson about DDH were included in the study. The 102 PC physicians and their answers to the expressions on DDH formed the subject of this study. The subject of the meeting had not been announced before the lecture in order to avoid the bias that may have been arisen if physicians knew and prepared themselves. The study protocol was approved by the administrative authorities of the province of Kahramanmaras and the Health Directorate of the province. Informed consent was obtained from all participants, and the study was approved by the ethical committee of the Faculty of Medicine.

Survey instrument and data collection. A structured questionnaire was prepared by the educational team of orthopedic surgeon and a family medicine specialist. The first part of the questionnaire (pre-test) focused on the demographic data of the participants, including age, sex, the university graduated from, the institution where the respondent worked, and the history of DDH in the family or children, or both, of the participants. The second part is targeted to evaluate the history of the traditional attitudes that were performed to the participants' children. The third part is consisted of 28 statements evaluating medical, practical, and traditional knowledge and attitude with regard to DDH. There were 24 statements consisted of medical and practical knowledge of definition, risk factors, diagnosis, and treatment of DDH. Four statements on the traditional attitudes were quite common in Turkish population, such as swaddling, shaking the baby in the head-down position by holding from the ankles after delivery in order to make the baby cry, forcing the hips and legs to extension in order to perform massage and exercise, and shaking the baby in the head-down position by holding the ankles after giving bath. The answer to each statement was 'true' or 'false'. In order to avoid blank answers, the participants had 3 alternatives as 'true', 'false' or 'have no ideas'. During the evaluation of the questionnaire, 'have no ideas' alternative were considered as a false answer. Each statement scored as 3.57 points (100/28). The Cronbach's alpha for the questionnaire was 0.63. The pre-test was given to the physicians to choose one from among the 'true', 'false' or 'have no ideas' alternatives, in 30 minutes. After collecting the questionnaires, a structured lesson of 60 minutes, consisted of the theoretical knowledge of the statements, was given by the orthopedic surgeon. Instantly after the lesson, the same blank questionnaire (post-test) was given to the participants to be completed within 30 minutes, as previously described.

Statistical analysis. The study had a power of 0.97 to detect a difference of 5 between pre- and post-test scores, with 5% significance level. Independent samples T test, Paired samples T test, McNemar test, and Pearson chi-square test were used for the statistical analysis. The values were presented as mean ± SD (standard deviation), and p values less than 0.05 (2-tailed), were considered to be statistically significant.

Results. ***Demographic items.*** One hundred and two PC physicians working at primary health care centers were enrolled in the study. All of the participants were unspecialized PC physicians. The mean practicing duration for the physicians was 72.00 ± 54.60 months (minimum 2 months-maximum 216 months). The mean age of the participants was 31.10 ± 4.6 years (minimum 24 years-maximum 43 years). The respondents had graduated from 24 different universities in Turkey. The demographic characteristics of the participants are presented in **Table 1**. The history of the traditional attitudes that were performed to the participants' children was investigated, and the results are presented in **Table 2**.

Table 1 - The demographic characteristics of the primary care physicians (n=102).

Characteristics	n (%)
Gender	
Male	45 (44.1)
Female	57 (55.9)
Practicing period	
1-60 months	47 (46.1)
61-120 months	35 (34.3)
≥ 121 months	20 (19.6)
Marital status	
Single	39 (38.2)
Married	63 (61.8)
Status of being a parent	
Yes	48 (47.1)
No	54 (52.9)
History of DDH in children	
Yes	0
No	102 (100)
History of DDH in the family	
Yes	5 (4.9)
No	97 (95.1)

DDH - Developmental dysplasia of the hip.

Table 2 - History of traditional attitudes that were performed to the participants' children (n=48).

Traditional attitudes	Answers	n	(%)
Swaddling	Yes	7	(14.5)
	No	41	(85.5)
Forcing the hip and legs to extension in order to perform massage and exercise	Yes	5	(10.4)
	No	43	(89.6)
Shaking the baby in the head-down position by holding from the ankles after delivery in order to make him/her cry.	Yes	4	(8.3)
	No	44	(91.7)
Shaking the baby in the head-down position by holding from his/her ankles after giving bath.	Yes	0	-
	No	48	(100)

Knowledge and attitude items. There was a significant difference between the pre-test (71.47 ± 9.92) and post-test (78.85 ± 12.86) scores of participants (p=0.000). None of the participants answered all of the statements correctly before the lesson. The percentages of the correct answers to the medical and practical knowledge with regard to DDH among the participants ranged between 19.4% and 98.0%. The 'have no ideas' choice ranged from 1.0 - 25.5%. The overall correct answer rate was 66.3% for the 24 statements related to the medical and practical knowledge, with regard to DDH. None of the participants answered all the statements correctly after the lesson. The percentage of correct answers ranged between 52.9% and 99.0%. The 'have no ideas' choice ranged from 1.0 - 2.0%. The overall post-test correct answer rate was 77.6%, for the 24 statements. There was no correlation between the pre- and post-test scores, and the practicing period of the physicians (p>0.05). There was no relationship between the demographic characteristics and the pre- and post-test scores of the participants (p>0.05). The participants, before (83 [81.4%]) and after (93 [91.2%]) the lecture, thought that 'DDH is a preventable disease'. The responses to the statements referring traditional attitudes were analyzed. Any response other than 'true', such as 'false' or 'have no ideas' alternatives, were considered as a false answer. Only 28 (27.5%) participants gave correct answers to all of the 4 statements before the lesson. After the lesson, 92 (90.2%) participants gave the correct answers to all of the 4 statements (p=0.00). The pre- and post-test responses to the statements referring to the traditional attitudes are presented in **Table 3**.

Table 3 - The pre- and post-test responses to the statements referring traditional attitude (n=102).

Traditional attitudes	Responses	Pre-test	Post-test
		n (%)	
'Instantly after the delivery, babies should be held from both the ankles in the head-down position, and should be shaken in order to make them cry'.	True	16 (15.7)	4 (3.9)
	False	74 (72.5)	98 (96.1)
	Have no ideas	12 (11.8)	0
'Swaddling makes the hips and knees extended, and forces the hip to dislocation'.	True	95 (93.1)	96 (94.1)
	False	3 (2.9)	6 (5.9)
	Have no ideas	4 (3.9)	0
'It is useful to hold the baby from ankles in the head-down position, and to shake after giving a bath in the first 40 days of life'.	True	4 (3.9)	4 (3.9)
	False	86 (84.3)	97 (95.1)
	Have no ideas	12 (11.8)	1 (1.0)
'It is useful to force the hip and legs to extension in order to perform massage and exercise, to facilitate the movements of the hip'.	True	36 (35.3)	1 (1.0)
	False	48 (47.1)	100 (98.0)
	Have no ideas	18 (17.6)	1 (1.0)

Discussion. In Turkey, primary health care centers (PHCCs) provide services involving the prevention, and statement of communicable disease and rehabilitation by a team consisting of at least a nurse, a midwife, a health technician, and a medical secretary, supervised by a physician. The PHCCs offer services on communicable disease, immunization, mother and child health care, family planning, public health education, and environmental health services, and also collects health related data.[20] The knowledge and attitude of PC physician, as the leader of the health team, on DDH is very important in the primary prevention of the disease. In the present study, the pre-test scores of

the participants were not completely satisfactory, but could be assumed as fairly good. However, there were significant differences between the pre- and post-test scores. None of the participants answered all of the statements correctly, before and after the lesson. These results demonstrated that the medical and practical knowledge on DDH was not completely satisfactory, and further education was needed. There could be various reasons for this insufficiency such as, 1) the workload of the physician and the inappropriate working conditions, 2) dissatisfaction of job and the lack of motivation for postgraduate education, and 3) no proper training in clinical skills during undergraduate and postgraduate training. In Turkey, the crowded PHCCs increase the workload of the doctors. The medical facilities are limited, the medical records are incomplete, and the patients are not registered under one index center. The physicians working under these conditions might not be able to find enough time and place to perform health education, and specific physical examinations. Health education and preventive measures need a longer period of time.[21] Also, because of incomplete medical records and unregistered patients, the continuity of care is interrupted. This would cause a huge consumption of time, and might be a factor for the lack of history taking and performing physical examination by the physicians. This would influence the doctor-patient relationship since continuity of care is important in patient satisfaction.[22] Besides patients' satisfaction, physicians' motivation and satisfaction is also an important issue. Dissatisfaction and 'burnout' have been reported as serious problems for PC physicians.[23] Increased privatization of medicine, prolonged training, and high expectations among patients and organizations seem to make contribution to this dissatisfaction. Job satisfaction is highly important in building up employee motivation and efficiency, as higher job satisfaction determines better employee performance and higher level of patient satisfaction.[24] However, among these factors, the most important one could be the inadequate training in clinical skills, preventive interventions, and health promotion during undergraduate training. It is agreed that clinical training periods in hospital wards are not sufficient to gain these skills.[25-27] In this study, all of the participants were medical doctors without specialty, and they commenced their practice in the PHCCs after graduation. Although the residency education has started, it is not obligatory to become a family physician in order to enter the health system. The participants graduated from 24 different universities in Turkey. The results reflected the nationwide undergraduate education with regard to DDH. By the year 2003, a new contract has been developed for PC physicians in Turkey. According to the new contract, all duties of the PC doctor, except individual health care, will be overtaken by the local health management office. As the first step, the unspecialized physicians who want to make a contract with the health system will undergo transitional education.[28] These regulations would solve some of the problems in the PHCCs, but there would still be a need for postgraduate training for specific subjects.[25]

The incidence of DDH has been reported with high rates of 10 - 100/1000 live births among some developing countries, where infants traditionally cradled, swaddled or clothed with their hips extended and adducted.[29,30] Its incidence was 15/1000 in Turkey, and environmental factors due to some faulty traditional attitudes played an important role in its etiology, were reported.[11,31]

In the questionnaire, the statements referring to the traditional attitudes are risk factors in the occurrence of DDH.[32,33] Only 27.5% of the participants gave the correct answers to all of the 4 statements before the lesson. Additionally, 8.3 - 14.5% of the doctors who are also parents (48 [47.1%]), could not able to protect their children from wrong traditional attitudes that were performed during the first year of their life. In our time, traditional attitudes on the babies are continuing in the physician's families as seen in **Table 2**. Swaddling was seen in a high rate as 14.5%. This may be explained as the effects of grandmothers that has traditional attitudes, in the physician's families. Traditional behaviors are deeply rooted in the society, and to change these attitudes usually needs extra effort and education. Disease prevention and health promotion are important tasks in the daily practice of all general practitioners. Health care providers, especially the PC physicians should be instrumental in teaching families how to promote the infant's physical and psychosocial well-being.[34] Effective communication relevant to preventive services and practices has its basis at the physician's skills, in not only basic history taking and data collection, but also in relationship-building, facilitation, negotiation, and partnership. Working with patients to change unhealthy behaviors, promote healthy behaviors, and enhance adherence could only be possible by effective communication skills.[35] These skills must be taught in both undergraduate and postgraduate periods.[25,36]

We conclude in this study that although a detailed, repeated clinical examination of the newborn performed by a well-trained health care provider is recommended as a standard practice throughout the most western countries, this is not yet widely implemented in the primary care settings across Turkey. In the developing countries with younger populations, attention must be paid to primary preventive activities. Since PC physicians serve an important role in DDH detection and referring, their knowledge of the definition, risk

factors, diagnosis, and treatment of DDH have utmost importance. This study clearly outlines the need for enhanced education and training to increase the level of knowledge skills of PC physicians in the prevention, identification, and management of cases with suspected DDH.

Acknowledgement. *We are indebted to the administrative authorities of the province of Kahramanmaras, and the Health Directorate for their support.*

References

1. Weinstein SL. Natural history of congenital hip dislocation (CHD) and hip dysplasia. ***Clin Orthop*** 1987; 225: 62-76.
2. Bauchner H. Developmental dysplasia of the hip (DDH): an evolving science. ***Arch Dis Child*** 2000; 83: 202.
3. Mooney JF, Emans JB. Developmental dislocation of the hip: a clinical overview. ***Pediatr Rev*** 1995; 16: 299-303.
4. Chan A, McCaul KA, Cundy PJ, Haan EA, Byron-Scott R. Perinatal risk factors for developmental dysplasia of the hip. ***Arch Dis Child Fetal Neonatal Ed*** 1997; 76: 94-100.
5. Herring JA, editor. Tachdjian's Pediatric Orthopaedics. 3rd ed. Pennsylvania: WB Saunders Company; 2002. p. 513-654.
6. Erol B, Dormans JP. Hip disorders. In: Dormans JP, editor. Pediatric orthopaedics core: knowledge in orthopaedics. Philadelphia (PA): Mosby; 2005. p. 224-237.
7. McCarthy JJ, Scoles PV, MacEwen GD. Developmental dysplasia of the hip (DDH). ***Curr Orthop*** 2005; 19: 223-230.
8. Ishida K. Prevention of the development of the typical dislocation of the hip. ***Clin Orthop Relat Res*** 1977; 126: 167-169.
9. Yamamuro T. CDH or DDH? ***J Orthop Surg (Hong Kong)*** 2005; 13: 111-112.
10. Uzel M, Ergun UG, Celik M, Ekerbicer H, Cetinus E, Karaoguz A. [Knowledge and attitude of nursing and midwifery college students on developmental dysplasia of the hip]. ***Acta Orthop Traumatol Turc*** 2006; 40: 377-383. Turkish
11. Tumer Y, Omeroglu H. [The prevention of DDH in Turkey]. ***Acta Orthop Traumatol Turc*** 1997; 31:176-181. Turkish
12. Godward S, Dezateux C. Surgery for congenital dislocation of the hip in the UK as a measure of outcome of screening. ***Lancet*** 1998; 351: 1149-1152.
13. Jones D. An assessment of the value of examination of the hip in the newborn. ***J Bone Joint Surg*** 1977; 59: 318-322.
14. Alexander M, Kuo KN. Musculoskeletal assessment of the newborn. ***Orthop Nurs*** 1997; 16: 21-31.
15. Boere-Boonekamp MM, Verkerk PH. Screening for developmental dysplasia of the hip. ***Semin Neonatol*** 1998; 3: 49-59.
16. Krikler SJ, Dwyer NS. Comparison of results of two approaches to hip screening in infants. ***J Bone Joint Surg*** 1992; 74: 701-703.
17. Fiddian NJ, Gardiner JC. Screening for congenital dislocation of the hip by physiotherapists. Results of a ten-year study. ***J Bone Joint Surg*** 1994; 76: 458-459.
18. American Academy of Pediatrics. Clinical Practice Guideline: Early Detection of Developmental Dysplasia of the Hip (AC0001). ***Pediatrics*** 2000; 105: 896-905.
19. Flikweert S, Pijnenborg L, Assendelft WJ. Nederlands Huisartsen Genootschap. [Summary of the Dutch College of General Practitioners' practice guideline, "Examination of the neonate"]. ***Ned Tijdschr Geneeskd*** 2002; 146: 2140-2144. Dutch
20. Republic of Turkey Ministry of Health Directorates of External Relations. Country health reports 1997. Ankara: Republic of Turkey Ministry of Health. Ankara, Turkey: Health Project General Coordination Unit; 1997. p. 1-3.
21. Deveugele M, Derese A, van den Brink-Muinen A, Bensing J, De Maeseneer J. Consultation length in general practice: cross-sectional study in six European countries. ***BMJ*** 2002: 326; 472.
22. Fan VS, Burman M, McDonell MB, Fihn SD. Continuity of care and other determinants of patient satisfaction with primary care. ***J Gen Intern Med*** 2005; 20: 226-233.
23. Musick JL. How close are you to burnout? ***Fam Pract Manage*** 1997; 4: 31-46.
24. Mowday RT. Strategies for adapting to high rate of employee turnover. ***Hum Resour Manage*** 1984; 23: 365-380.
25. Cady RB. Developmental dysplasia of the hip: definition, recognition, and prevention of late sequelae. ***Pediatr Ann*** 2006; 35: 92-101.
26. Johnston BT, Boohan M. Basic clinical skills: don't leave teaching to the teaching hospitals. ***Med Educ*** 2000; 34: 692-699.
27. Hastings AM, Fraser RC, McKinley RK. Student perceptions of a new integrated course in clinical methods for medical undergraduates. ***Med Educ*** 2000; 34: 101-107.
28. EQuip Meeting: Report from Turkey. Available from: URL: http://www.equip.ch/files/6/turkeyreportheidelberg.pdf
29. Sahin F, Akturk A, Beyazova U, Cakir B, Boyunaga O, Tezcan S, et al. Screening for developmental dysplasia of the hip: Results of a 7-year follow-up study. ***Pediatr Int*** 2004; 46: 162-166.
30. Kremli MK, Alshahid AH, Khoshhal KI, Zamzam MM. The pattern of developmental dsyplasia of the hip. ***Saudi Med J*** 2003; 24: 118-120.
31. Bayindir S, Tanis Z. Congenital hip dislocation and other hip pathologies found by chance in the abdominal radiograms. ***Hacettepe Tıp Cerrahi Bülteni*** 1970; 3: 220-231. Turkish
32. Kutlu A, Memik R, Mutlu M, Kutlu R, Arslan A. Congenital dislocation of the hip and its relation to swaddling used in Turkey. ***J Pediatr Orthop*** 1992; 12: 598-602.
33. Yurdakok K, Yavuz T, Taylor CE. Swaddling and acute respiratory infections. ***Am J Public Health*** 1990; 80: 873-875.
34. Olesen F, Dickinson J, Hjortdahl P. General practice - time for a new definition. ***Br Med J*** 2000; 320: 354-357.
35. Dube CE, O'Donnell JF, Novack DH. Communication skills for preventive interventions. ***Acad Med*** 2000; 75: 45-54.
36. Woolf AD. How to assess musculoskeletal conditions. History and physical examination. ***Best Pract Res Clin Rheumatol*** 2003; 17: 381-402.