

Awareness Level of General Population Regarding Club Foot in Aseer Region, Southern of Saudi Arabia

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Abstract

Background: Club foot, is a congenital structural deformity characterized by hindfoot equines, midfoot cavus, and forefoot adduction. It is the most common musculoskeletal birth defect worldwide with males being more affected than females. Without treatment, clubfoot may lead to lifelong disability. Population awareness regarding clubfoot has a significant role in early diagnosis and management of the disorder.

Aim: to assess the general population awareness regarding club foot in Aseer region, southern Saudi Arabia.

Methodology: A descriptive cross-sectional approach was used targeting all population in Aseer region. The study was conducted during the period from December 2019 to April 2020. Data were collected using structured questionnaire which included person's socio-demographic data, and participants' awareness regarding club foot. The questionnaire was uploaded online using social media platforms.

Results: A total of 744 participants were included in the survey from the general population in Aseer region. Participants' ages ranged from 18 to 55 years old and males were 375 (51.2%). As for club

foot risk factors, 314 (42.2%) participants reported genetic factors followed by Fetal malpresentation (222; 29.8%), neurological disorders (124; 16.7%), and twin pregnancy (69;9.3%). Totally, good awareness level was recorded among a very low percentage of the surveyed population.

Conclusions & recommendations: In conclusion, the survey revealed that public awareness regarding club foot in Aseer region was very low especially among females with a high level of education. Health care providers had no role in improving this public awareness.

Key words: Club foot; population, awareness, knowledge, predictors, management, outcome

Background

Clubfoot is a foot disorder featured by one or both feet being rotated inward and downward (1, 2). There may be a shortage in the affected foot and leg compared to the other (3). Nearly half of the cases with clubfoot are affected in both feet (4). Mostly, club foot is not associated with other problems. Without treatment, the foot remains deformed, and people walk on the sides of their feet (5). This may lead to pain and difficulty walking (6).

The exact cause is usually unclear. Both genetic and environmental factors are reported to be the main risk factors (7-9). In cases of identical twins, affection of one of them is associated with a 33% chance the other one will be as well (10). The club foot pathology includes disruption of the muscles or connective tissue of the lower leg, leading to joint contracture (11).

Clubfoot is identified clinically, and radiography is not vital for diagnosis. Besides, ultrasound may have a role in antenatal diagnosis (12). Treatment methods for managing clubfoot are numerous, and include non-operative and operative techniques. Repeated manipulation and casting are non-operative treatments of clubfoot, with many described methods (13). One of these is the Ponseti method, which is considered the gold standard used in most countries and is reported to have a high success rate (14).

Population awareness regarding clubfoot has a significant role in early diagnosis and management of the disorder (15). On the other hand, lack of awareness is considered a barrier for cases management (16). Worldwide, there is a rarity of studies detecting public awareness level about clubfoot and the few studies available show low awareness in the general population regarding the condition (16-18).

Methodology

A descriptive cross-sectional approach was used targeting all the population in Aseer region. The study was conducted during the period from December 2019 to April 2020. Data were collected using structured questionnaire which was developed by the researchers after intensive literature review and expert's consultation. The questionnaire data included person's socio-demographic data such as age, gender, and education. Participants' awareness regarding club foot was assessed covering risk factors, intervention modalities, recovery rate, and magnitude of the disorder among children. A panel of 3 experts reviewed the questionnaire independently for content validity and all suggested modifications were applied till the final tool was achieved. The questionnaire was uploaded online using social media platforms by the researchers and their relatives and friends to be filled in by all the population in Aseer region. A pilot study was conducted to assess tool applicability and reliability. The tool reliability coefficient (Alpha Cronbach's) was assessed and equalled 0.71.

Data analysis

After data was extracted, it was revised, coded and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two

tailed test. P value less than 0.05 was considered to be statistically significant. For awareness items, each correct answer was scored one point and total summation of the discrete scores of the different items was calculated. A participant with a score less than 60% (5 points) of the maximum score was considered to have poor awareness while good awareness was considered if they had a score of 60% (6 points or more) of the maximum. Descriptive analysis based on frequency and percentage distribution was done for all variables including demographic data, awareness items and source of information. Cross tabulation was used to assess distribution of awareness according to participants' personal data and source of information. Relations were tested using Pearson exact probability tests

Results

A total of 744 participants were included in the survey from the general population in Aseer region. Participants' ages ranged from 18 to 55 years old and males were 375 (51.2%). Exactly 378 (50.8%) of the respondents were single. University level of education was recorded among 263 participants (35.3%) followed by university students (41.8%) (Table 1).

Table 2 demonstrates club foot awareness among general population. As for club foot risk factors, 314 (42.2%) participants reported genetic factors followed by fetal malpresentation (222; 29.8%), neurological disorders (124; 16.7%), and twin pregnancy (69; 9.3%). Foot cast as the first recommended method in treating club foot was reported by 271 participants (36.4%). The first 6 months was the preferred age for treating club foot was reported by 253 (34%) of the participants and recovery rate in case of physiotherapy of 61%-80% was reported by 160 (21.5%) participants. Recovery percentage in case of repeated foot cast of 80%-100% was reported by 140 (18.8%) participants while Recovery percentage in case of surgical intervention of 61%-80% was reported by 137 participants (18.4%). The actual percentage of children having club foot and needing management was correctly reported by 319 participants (42.9%). Totally, good awareness level was recorded among 33 (4.4%) participants.

Regarding source of information for club foot (Figure 1), 56.7% of the participants had no identified source but 16.3% had their information from similar cases and 12.9% from families and friends while mass media as a source of information was reported by 2% of the participants.

Table 3 illustrates distribution of general population awareness regarding club foot by their personal data and source of information. Good awareness level was recorded among 6.1% of the male participants compared to 2.8% of the females with statistical significance ($P=0.029$). Also, 14% of the participants with diploma and 7.4% of university students had good awareness level compared to 0.4% of university educated group ($P=0.001$). The highest awareness level was recorded among participants who had their information from books and magazines (8.5%) in comparison to none of those who reported mass media as a source of information ($P=0.047$).

Table 1: Socio-demographic data of survey participants' in Aseer region

| Personal data | No | % |
|--------------------------|-----|-------|
| Gender | | |
| Male | 375 | 51.2% |
| Female | 358 | 48.8% |
| Age in years | | |
| < 20 years | 104 | 14.0% |
| 20-29 | 311 | 41.8% |
| 30-39 | 174 | 23.4% |
| 40-49 | 114 | 15.3% |
| 50+ | 41 | 5.5% |
| Marital status | | |
| Single | 378 | 50.8% |
| Married | 336 | 45.2% |
| Divorced/ widow | 30 | 4.0% |
| Educational level | | |
| Secondary/ less | 120 | 16.1% |
| Diploma | 50 | 6.7% |
| University student | 311 | 41.8% |
| University/ more | 263 | 35.3% |

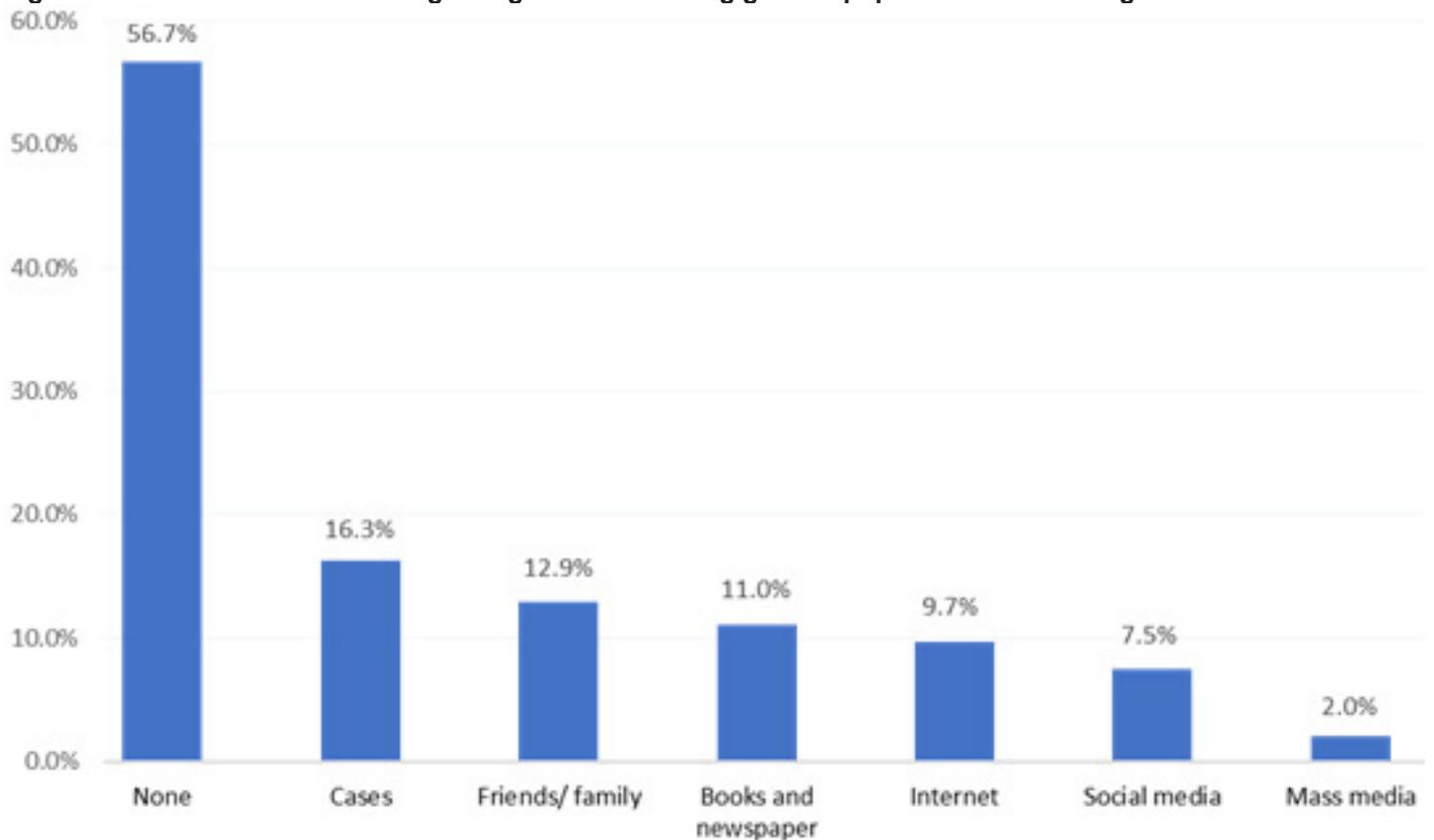
Figure 1: Source of information regarding club foot among general population in Aseer region

Table 2: club foot awareness among general population in Aseer region, Saudi Arabia

| Club foot awareness | No | % | |
|---|-------------------------------|--------------------------|-------|
| Risk factors of club foot | <i>Don't know</i> | 265 | 35.6% |
| | <i>Child gender</i> | 20 | 2.7% |
| | <i>Twin pregnancy</i> | 69 | 9.3% |
| | <i>Oligohydramnios</i> | 126 | 16.9% |
| | <i>Genetic</i> | 314 | 42.2% |
| | <i>Fetal malpresentation</i> | 222 | 29.8% |
| | <i>Neurological disorders</i> | 124 | 16.7% |
| | <i>Caesarean delivery</i> | 30 | 4.0% |
| | <i>Others</i> | 7 | .9% |
| First method in treating club foot | <i>Don't know</i> | 235 | 31.6% |
| | <i>Physiotherapy</i> | 136 | 18.3% |
| | <i>Surgical intervention</i> | 102 | 13.7% |
| | <i>Foot cast</i> | 271 | 36.4% |
| Optimum age to treat club foot | <i>Don't know</i> | 248 | 33.3% |
| | <i>First 6 months</i> | 253 | 34.0% |
| | <i>6-12 months</i> | 187 | 25.1% |
| | <i>1-4 years</i> | 56 | 7.5% |
| Recovery % in case of physiotherapy | <i>Don't know</i> | 312 | 41.9% |
| | <i>0%-20%</i> | 26 | 3.5% |
| | <i>21%-40%</i> | 52 | 7.0% |
| | <i>41%-60%</i> | 97 | 13.0% |
| | <i>61%-80%</i> | 160 | 21.5% |
| | <i>80%-100%</i> | 97 | 13.0% |
| Recovery % in case of repeated foot cast | <i>Don't know</i> | 311 | 41.8% |
| | <i>0%-20%</i> | 21 | 2.8% |
| | <i>21%-40%</i> | 33 | 4.4% |
| | <i>41%-60%</i> | 79 | 10.6% |
| | <i>61%-80%</i> | 160 | 21.5% |
| | <i>80%-100%</i> | 140 | 18.8% |
| Recovery % in case of surgical intervention | <i>Don't know</i> | 350 | 47.0% |
| | <i>0%-20%</i> | 12 | 1.6% |
| | <i>21%-40%</i> | 14 | 1.9% |
| | <i>41%-60%</i> | 65 | 8.7% |
| | <i>61%-80%</i> | 137 | 18.4% |
| | <i>80%-100%</i> | 166 | 22.3% |
| Actual % of children having club foot | <i>Don't know</i> | 319 | 42.9% |
| | <i>0%-20%</i> | 206 | 27.7% |
| | <i>21%-40%</i> | 110 | 14.8% |
| | <i>41%-60%</i> | 75 | 10.1% |
| | <i>61%-80%</i> | 23 | 3.1% |
| | <i>80%-100%</i> | 11 | 1.5% |
| Overall awareness | <i>Poor</i> 711 (95.6%) | <i>Good</i> 33 (4.4%) | |

Table 3. Distribution of general population awareness regarding club foot by their personal data and source of information

| Factors | | Awareness level | | | | P-value |
|-----------------------|---------------------|-----------------|--------|------|-------|---------|
| | | Poor | | Good | | |
| | | No | % | No | % | |
| Gender | Male | 352 | 93.9% | 23 | 6.1% | .029* |
| | Female | 348 | 97.2% | 10 | 2.8% | |
| Age in years | < 20 years | 102 | 98.1% | 2 | 1.9% | .053 |
| | 20-29 | 290 | 93.2% | 21 | 6.8% | |
| | 30-39 | 166 | 95.4% | 8 | 4.6% | |
| | 40-49 | 112 | 98.2% | 2 | 1.8% | |
| | 50+ | 41 | 100.0% | 0 | 0.0% | |
| Marital status | Single | 355 | 93.9% | 23 | 6.1% | .064 |
| | Married | 326 | 97.0% | 10 | 3.0% | |
| | Divorced/ widow | 30 | 100.0% | 0 | 0.0% | |
| Educational level | Secondary/ less | 118 | 98.3% | 2 | 1.7% | .001* |
| | Diploma | 43 | 86.0% | 7 | 14.0% | |
| | University student | 288 | 92.6% | 23 | 7.4% | |
| | University/ more | 262 | 99.6% | 1 | .4% | |
| Source of information | Not source | 399 | 94.5% | 23 | 5.5% | .047* |
| | Cases | 119 | 98.3% | 2 | 1.7% | |
| | Books and newspaper | 75 | 91.5% | 7 | 8.5% | |
| | Friends/ family | 95 | 99.0% | 1 | 1.0% | |
| | Social media | 53 | 94.6% | 3 | 5.4% | |
| | Internet | 71 | 98.6% | 1 | 1.4% | |
| | Mass media | 15 | 100.0% | 0 | 0.0% | |

P: Exact probability test

* P < 0.05 (significant)

Discussion

The current survey aimed to assess Aseer region population's awareness regarding club foot which is a congenital structural deformity characterized by hindfoot equines, midfoot cavus, and forefoot adduction. It is the most common musculoskeletal birth defect worldwide with males being more affected than females. Without treatment, clubfoot may lead to lifelong disability. The affected person may not be able to wear shoes and may experience severe pain during walking (19, 20). The study revealed that public awareness regarding club foot in general was very low (did not exceed 5%) especially for recovery rate after different treatment modalities. Aseer population showed some knowledge regarding disease genetic nature, foot cast as a treatment modality, proper age for the intervention but other risk factors were poorly identified by the study participants. High awareness was more recorded among young aged participants whose source of information was books and magazines. This explains the surprising finding that participants with diploma and university students were more knowledgeable regarding club foot than university graduated participants. A second finding which should be considered was that

medical staff and health care providers had no role in educating the population regarding this disorder which is a great concern and more detailed surveys should cover this area.

Conclusion and Recommendations

In conclusion, the survey revealed that public awareness regarding club foot in Aseer region was very low especially among females with high level of education. Also, healthcare providers had no role in improving this public awareness. Treatment modalities with its net recovery rate should be explained to the population to raise their awareness and improve their perception regarding their affected children. Health education sessions should be held for high risk groups to be fully aware regarding the nature of the disorder and to give hope for postnatal treatment outcome.

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