**Appendix 2 - Analysed data and results**

In this file, you find the analysed data for the article titled: Primary Dysmenorrhoea - Prevalence and Knowledge assessment in 10 – 18-year-old Syrian female teenagers: A cross-sectional study with pre-post analysis.

We collected 579 valid questionnaires in four schools compared to 261 post awareness questionnaires in two schools out of these four.

The data were filled into a single database using Google Forms®, then analyzed via Microsoft Excel® and SPSS®. Pre and post awareness analyses were done separately.

The statistics of the collected data are as follows:

Section 1: Participants characteristics

Distribution among schools:  46.3% (268/579) were in Ahmed Al-Sabbagh school and 29.2 % (169/579), 20% (116/579), 4.5% (26/579) were in Omar Al-Abrash, Omar Ibn Alkhattab, and AbdulRahman Al-Shahbandar schools respectively.

Age: The mean age of included students approximately was 14 ranging between (10-17) years.

School grade: most of the students were in the 9th grade (62.7 %) (363/579), the remaining students were in the 8th grade (18.8%), the 7th grade (13.6%) and the 10th grade (4.8 %).

Detailed presentation of the age of the participants and their school grades is to be viewed in Tables 1 and 2.

Home region: most of the participants come originally from Damascus with 84.8% (491/579) and most of them grew up there too with 91.7% (531/579).

We managed to collect 261 post-awareness questionnaires from two schools with a percentage of 50.6% (132/261) from Ahmad Al-Sabbagh school and 49.4% (129/261) from Omar Ibn Alkhattab school. In this sample the mean age was approximately 14. 60.2% of them were in the 9th grade, 31.4% in the 8th and 8.4% in the 10th.

Section 2: Menarche and menstrual cycle-related pain (MRP):

Menarche: Out of all 10 - 17-year-old girls, nearly 84% (487/579) menstruated, with a mean age of 12.65 (6 entries regarding the starting age of menarche were missing).

Most participants 42.2% (203/481) started menstruating at the age of 13. The age of menarche is individually shown in table 3.

Menstrual pain: We used the visual analogue scale with values ranging between 0 (no pain) and 10 (unbearable pain). 5 entries were empty.

Menstrual cycle-related pain prevalence is 87.2% (421/482).

Of the 87% of participants who reported menstruation-related pain, nearly 32.3% of the respondents (n=136) reported mild pain (1–3 points on scale), 44 % (n=185) reported moderate pain (4–7 points) and 23.7 % (n=100 ) reported severe pain (8–10 points).The detailed results of pain-level prevalence are demonstrated in table 4.

Section 3: awareness measurement around MRP and normal menstrual cycle

*1st Question: when does menstrual pain begin?*

54.7% of the respondents (317/579) thought that pain only occurs hours before and during the first two days of the menstrual cycle.

19.9% (115/579) believed it occurs during the entire menstruation period. 15.2% (88/579) believed it occurs only several days before the menstrual cycle, and 5.9% (34/579) stated it is an abdominal pain outside the menstruation.

Post awareness results were: 69.1% (179/259), 10.8% (28/259), 16.6% (43/259) and 3.5% (9/259) for the same choices respectively, and two entries were missing.

*2nd Question: where does menstrual blood come from?*

With 13 missing entries, 47.3% (274/579) believed that menstruation blood comes from the uterus. 43.7% (253/579) answered "I don't know" and 6.7% (39/579) gave wrong answers (ovaries, bladder, gastrointestinal system) versus 85.7% (222/259), 12% (31/259) and 2.3% (6/259) post awareness respectively (2 missing entries).

*3rd Question: have you ever consulted a doctor regarding pain during menstruation (dysmenorrhoea)?*

Most participants did not consult a doctor regarding menstrual pain 91.6% (386/421). From those who consulted a doctor regarding their painful menstruation, 42% had severe pain (n=15) and 48% had moderate pain (n=17).

*In the 4th question, we asked the girls to mark what they thought were the risk factors/causes for dysmenorrhoea.*

Pre-awareness:

Most students thought heavy menstrual bleeding is a risk factor 46.113% (267 entry), other answers about risk factors were; irregular cycles 45.4% (263 entry), early menarche 40.5% (235 entry), gynaecological infection 39.2% (227 entry), structural genital abnormalities 34.02% (197 entry), prolonged periods 32.1% (186 entry), post-pregnancy and delivery 24.8% (144 entry), lack of exercise and low calcium and vitamin D 20.55% (119 entry) each, presence of a family history of MRP 19.2% (111 entry), smoking 16.7% (97 entry), nulliparity 16% (93 entry), regular cycles 13.8% (80 entry), and obesity 11.7% (68 entry).

Although answers changed between pre and post awareness, however, heavy bleeding remained the most thought to be risk factor 63.6% (166 entry), followed by gynaecological infections 58.2% (152 entry), irregular cycles with 55.1% (144 entry), structural genitals abnormalities 51.3% (134 entry), then early menarche 50.5% (132 entry), prolonged periods 43.6% (114 entry), post-pregnancy and delivery 30% (78 entry), lack of exercise 28.7% (75 entry), presence of a family history of MRP 25.2% (66 entry), smoking 22% (57  entry), then low calcium and vitamin D 20.3% (53 entry), obesity 14.2% (37 entry), and lastly nulliparity 13.4% (35 entry) and regular cycles 9.2% (24 entry).

These data are shown in the graph below (Figure 1.)

*5th Question: Of the following cases, which cases - based on your knowledge - requires seeking a doctor (multiple choice question).*

The results are shown for pre and post awareness respectively.

68.3% (396 entry) versus 74% (192 entry) agreed about heavy bleeding with clots during menstrual cycles.

67.7% (392 entry) versus 71% (185 entry) chose the dysmenorrhoea that is not responsive to painkillers, 59% (343 entry) increased to 68% (178 entry) thought that worsening pain requires medical attention. 50% (291 entry) versus 69% (181 entry) chose the pain during menstruation and 49.5% (287 entry) that changed to 53% (138 entry) for nausea and vomiting. Lastly, 20% (117 entry) versus 23.9% (62 entry) thought bearable chronic dysmenorrhoea requires medical attention (Figure 2.).

*6th Question: Of the following symptoms, which symptoms - according to your knowledge - are considered normal if appeared a few days before menstruation (multiple choice question).*

The answers varied between pre and post awareness as follows:

74% (431/579) increased to 80% (211/261) chose lower abdominal pain, 57.3% (332/579) rose to 63.6% (166/261) chose fatigue, while 57.1% (331/579) versus 71% (186/261) chose acne. 53.3% (309/579) versus 71.6% (187/261) picked mood disturbances and depression, 31% (180/579) up to 34.8% (91/261) went for “headache”, 26.4% (153/579) that changed to 32.5% (85/261) selected sleep disturbances, 26.4% (153/579) versus 29.5% (77/261) were also for breast tenderness. Furthermore, the choice of “lacking the ability to concentrate” decreased from 26% (151/579) to 22.2% (58/261), and on the opposite, the bleeding rose slightly from 22.1% (128/579) to 25.6% (67/261). The same went from 21.7% (126/579) to 25.6% (67/261) for “non-white vaginal discharge”, and the “weight gain” was selected by a relatively similar proportion with 13.6% (79/579) pre-awareness versus 13% (34/261) post-awareness. 11.3% (66/579) versus 13% (34/261) was observed for “constipation/diarrhoea”, and slight sinking from 7% (41/579) down to 6% (16/261) for swelling of the eyelids.

Lastly, appetite disturbance also changed from 28.1% (163/579) to 38.7% (101/261).

These results are represented in (Figure 3.)

 Section 4: myths around dysmenorrhoea.

The final section of the questionnaire is the close-ended questions section.

In the questionnaires, two form copies were totally empty in this section in the post-awareness sample, and the number of missing entries differed in the pre-awareness sample for every question and is thus clarified respectively.

The collected results for pre and post awareness are represented respectively as follows:

81.5% (468/574) versus 93.1% (241/259) of the participants thought that mild pain during menstruation is a normal thing, while 13.9% (80/574) later decreased to 1.2% (3/259) believed that it is not. 4.5% (26/574) pre-awareness versus 5.8% (15/259) in post awareness answered: "I don't know".

 "It is not permissible to shower during menstruation": For this statement, 67% (385/574) decreasing to 35.5% (92/259) answered "wrong", 19.8% (114/574) drastically increasing to 57.5% (149/259) found it to be "true", and 13% (75/574) versus 6.9% (18/259) replied: "I don't know". In the previous two questions, five pre-questionnaires had no choice chosen.

"It is not permissible to pluck or cut hair during menstruation": Here, 56% (323/576) versus 40.5% (105/259) declared this statement as “wrong”, 14% (81/576) increased significantly to 45.6% (118/259) believed this statement, and the rest 29.8% (172/576) versus 13.9% (36/259) answered: "I don't know". A total of three pre-awareness entries were missing.

"You should not take painkillers during menstruation": 40.3% (232/575) versus 52% (135/259) agreed with the statement, however, 28.5% (164/575) versus 30.9% (80/259) disagreed. A difference is to be observed with 31.1% (179/575) and 17% (44/259) for the “I don’t know” answer. Also, four pre-awareness entries were completely missing.

"It is not permissible to eat lemon, cinnamon or ginger during menstruation": With six Pre-entries unfilled, 26.5% (152/573) who rose to 42% (109/259) agreed with the statement, 28.4% (163/573) with a slight increase to 33.6% (87/259) disagreed, and the rest 45% (258/573) pre-awareness versus 24.3% (63/259) post-awareness stated they didn’t know.

"You should not drink cold water during menstruation": Empty samples summed up to nine for this question, and the values also varied here with 38% (217/570) versus 48.2% (125/259) agreeing with the statement, 21.7% (124/570) and 27.4% (71/259) disagreeing and a decrease from 40.1% (229/570) to 24.3% (63/259) for those who stated no knowledge of the topic.

"It is not permissible to exercise or effort during menstruation": In relation to movement and sport, 22.6% (130/574) increasing to 34% (88/259) agreed they should not exert physical effort, 54.8% (315/574) versus similarly 56.4% (146/259) disagreed with that, and 22.4% (129/574) falling to 9.7% (25/259) replied, “I don’t know”. Five entries failed here too.

"Moderate lower abdominal pain outside the times of menstruation is normal": With the last statement, 36.9% (211/572) versus 51.7% (134/259) agreed,  and 36.5% (209/572) in comparison to 27% (70/259) disagreed, while 26.5% (152/572) and 21.2% (55/259) also stated they didn’t know, with a total of seven Pre-missing entries.

Data analysis and clinical significance:

The choices of the participants were weighed and summed for each questionnaire, with a mark of (1) for each correct answer and (0) for the incorrect / “I don’t know” answers. By comparing the results pre and post awareness using Microsoft Excel®, we got a p-value of (p = 0.687) for a confidence interval (CI = 95%), which greatly exceeds the presupposed value of significance (p ≤ 0.05).