

## RESEARCH ARTICLE

## ASSOCIATION BETWEEN SYMPTOMS OF PRIMARY DYSMENORRHEA, PHYSICAL FUNCTIONS AND WORK PRODUCTIVITY

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## ABSTRACT

**Background:** Primary dysmenorrheal (PD) due to its high prevalence is considered health issue since it affects different aspects of life including physical functions and work productivity.

**Objective:** To find association between symptoms of primary dysmenorrheal, physical functions and work productivity. **Material & Methods:** A cross-sectional survey 99 subjects with primary dysmenorrhea was conducted. Numeric pain rating scale, daily record of severity of problems (DRSP) for overall symptoms of primary dysmenorrhea, short form-36 for physical function and role limitation due to physical health were used to collect data. Simple linear regression was used to explore the relationship among variables. **Results:** Mean age and age at menarche were 21.06±2.59 and 13.15±1.03 years respectively. The results showed that pain had significantly negative association with physical function ( $r=-0.20$ ,  $p=0.02$ ) but insignificantly associated with role limitation due to physical health ( $r=0.08$ ,  $p=0.20$ ). The symptoms of primary dysmenorrhoea on DRSP also showed significant negative association with physical function ( $r=-0.36$ ,  $p=0.00$ ), role limitation due to physical health ( $r=-0.18$ ,  $p=0.03$ ) and positively associated with productivity or efficiency ( $r=0.64$ ,  $p=0.00$ ) on DRSP scale. Physical function was also positively associated with role limitation due to physical health ( $r=0.42$ ,  $p=0.00$ ). **Conclusion:** the study concluded that pain reduces the physical functioning in primary dysmenrhea. The overall symptoms of primary dysmenohea also reduce physical functioning, role limitation due to physical health and work related productivity and efficiency.

**Keywords:** Primary dysmenorrhea, physical function, physical health, DRSP, Numeric pain rating scale.

## INTRODUCTION

Primary dysmenorrhea (PD) can be described as cramps occurring immediately before or during menstruation with any pathology of pelvis. The myometrial activity leads to pelvic ischemia due excess in pressure up to 60 mm Hg. Prostaglandin synthesis also increase this activity and further cause uterine and intestinal wall contractions.<sup>1</sup> The symptoms includes in PD are, pain or pressure sensation in lower abdomen sometimes radiate hips, buttocks and medial thigh. Other symptoms of PD are upset stomach, vomiting, and loose stools. Tiredness, fatigue, depression or anxiety, mood swings, irritability, lack of interest, difficulty in concentration, changes in appetite, changes in sleep, inability to cope and breast pain. Lower metabolic rate and acne are physiological effects of normal menstruation. About 30-90% women experience primary menstrual pain with varying intensity<sup>2</sup>. PD represents public health problem. Many studies described prevalence and impact of primary dysmenorrhea on health, work productivity, and activities of daily living.<sup>2,3,4</sup> Almost 600 million working hours or 2 billion dollars/year are lost due to lower outputs or less efficiency during PD<sup>4</sup>.

There are several strategies to manage symptoms of PD including pharmacological and conservative management. But some psycho-social factors influence management of symptoms of PD at cognitive level.<sup>5</sup> The medication of PD symptoms may include NSAIDs, oral contraceptives or local anesthetics. The uses of these medications sometimes cause side effects. Conservative management includes heat therapy, cold therapy, acupuncture, acupressure, TENS and some soft tissue mobilization techniques<sup>6</sup>.

Several studies reported absenteeism and lack of social interaction as negative effects of PD, but absenteeism is not considered as single factor that cause lack of work related productivity<sup>7</sup>. Along with other symptoms, physical functioning also compromised due to pain and psychological symptoms that sometime further contribute in role limitation and decreased work productivity.

The purpose of this study was to determine association between symptoms of primary dysmenorrhea, physical functions and work productivity.

## MATERIAL & METHODS

A cross-sectional descriptive study was conducted at Royal group of colleges, Gujranwala. The n=99 female subjects were recruited by non-probability convenience sampling technique. A gynecologist confirmed the diagnosis of primary dysmenorrhea (PD) by clinical evaluation. Subjects were aged 16-25 years and having pain or other symptom of primary dysmenorrhea. Athletes, individuals with neuromuscular problems, married females, and subjects with complications or secondary dysmenorrhea were excluded.

Self-structured questionnaire was used for demographics and numeric pain rating scale (NPRS) was used to assess the pain. Daily record of severity of problems (DRSP) was used to assess associated symptoms which consist of 21 items covering 11 domains. It consisted of monthly record including all phases of menstrual cycle although the data was collected for only four symptomatic days only in the present study. The mean value of all four days was calculated for every subject to represent each domain. For every domain, the maximum rating item was only included. For each day, sum of all domains was taken with score ranging from 11 (no symptoms) to 66 (extreme symptoms). Last section of DRSP questionnaire was used to assess effects of PD on productivity or inefficiency. Short form-36 (SF-36) was used to assess physical function and role limitation due to physical health. SF-36 consists of 36 items over eight domains: physical function, social function, role-emotional, role-physical, general bodily pain, vitality (energy/fatigue), emotional health, and general health. For above mentioned domains the severity level has been described with their numbers so every participant answered according to that. For every item scores were coded, then summed up, and converted into a scale from 0 (worst health state) to 100 (best health state).

Every tool was explained to the subjects in detail and was guided how to report answers. They were asked to respond numeric pain rating scale, report physical functions and role limitation (SF-36) during the days of menstruation but reported every item only once. Results are described in form of frequencies, charts

and tables while bivariate Pearson correlation coefficient has been applied for linear correlation. Data was analyzed using SPSS (version 22)

## RESULTS

The mean age of study participants was  $21.06 \pm 2.59$  years. A total of n=35 participants were from age range of 16-20 years and n=64 were from 21-25 years. The n=76 of subjects reached menarche at age of 13-14 years, while n=17 and n=6 reached at 11-12 and 15-16 years respectively. The mean age at menarche, BMI, pain, score of DRSP, physical function and role due to physical health can be seen in table 1.

**Table 1: Demographics, physical function and role limitation**

	Mean $\pm$ SD
Age (years)	21.06 $\pm$ 2.59
Age at menarche (years)	13.15 $\pm$ 1.03
BMI (kg/m <sup>2</sup> )	21.47 $\pm$ 3.21
Pain	6.29 $\pm$ 2.03
DRSP	40.66 $\pm$ 7.88
Physical function	49.96 $\pm$ 18.51
Role limitation due to physical health	44.95 $\pm$ 26.72
Effects on productivity or inefficiency	3.15 $\pm$ 0.94

The results showed that pain had significant association with physical function ( $r=-0.20$ ,  $p=0.02$ ) but insignificantly associated with role limitation due to physical health ( $r=0.08$ ,  $p=0.20$ ). The symptoms of primary dysmenorrhea on DRSP also showed significant association with physical function ( $r=-0.36$ ,  $p=0.00$ ), role limitation due to physical health ( $r=-0.18$ ,  $p=0.03$ ), productivity or efficiency ( $r=0.64$ ,  $p=0.00$ ). Physical function was also associated with role limitation due to physical health ( $r=0.42$ ,  $p=0.00$ ). (Table 2)

**Table 2: Association of pain and symptoms of dysmenorrhea with physical function and role limitation due to physical health**

	r	p-value
Pain - Physical function	-0.20	0.02
Pain - Role due to physical health	0.08	0.20
DRSP - Physical function	-0.36	0.00
DRSP - Role due to physical health	-0.18	0.03
DRSP - Effects on productivity or inefficiency	0.64	0.00
Physical function - Role limitation due to physical health	0.42	0.00

## DISCUSSION

The objective of the study was to determine association between symptoms of primary dysmenorrhea and quality of life. The results indicated that pain and other symptoms were negatively associated with QOL related to physical function.

One past study used a different questionnaire for symptoms of dysmenorrhea and also for quality of life but it showed that primary dysmenorrhea was a leading cause of absenteeism in colleges and exert adverse effects on the quality of life of young girls but primary and secondary dysmenorrhea was not differentiated<sup>8</sup>. Within present study other symptoms of primary dysmenorrhea were affecting physical function more than the pain and there were more chances of reduced productivity or efficiency, participation in social activities, and relation with others respectively with increasing symptoms. A study conducted by Raheela et al. reported that pain and symptoms related to primary dysmenorrhea significantly associated with depression that in turn significant decrease work efficiency.<sup>9</sup>

Another similar study was conducted in Tbilisi Georgia, to quantify impact of PD on health-related quality of life, occupational aspect like absenteeism and work productivity through Euro-Qol questionnaire. The study reported significantly lower score of mobility, self-care, usual activities, pain/discomfort, and anxiety/depression in adolescents. Quality of life was also assessed by VAS that showed significantly lower score ( $74.38 \pm 17.83$ ) against the healthy group. It was also reported that more absenteeism due to PD (56.88% vs. 43.12%,  $p < 0.03$ ) than healthy adolescents.<sup>10</sup>

Meal skipping increase the chances of dysmenorrhea by two times ( $P < 0.05$ )<sup>6</sup>. In the present study due to other symptoms of dysmenorrhea there were more chances of decreased physical function rather than pain and also due to reduced physical function role was being limited. Barnard et al. found low scores for quality of life in all domains ( $P < 0.01$ ) including physical function and role limitation due to physical health except energy and vitality ( $p < 0.05$ ), both before and after adjusting for sociodemographic, psychosocial, and comorbidity variables but primary

dysmenorrhea was not differentiated separately including irregular menses, menorrhagia, dysmenorrhea, and premenstrual symptoms. Within this study mean age was 35.8 years and 67% reported one or more menstrual symptoms but in present study mean age was 21.06 years and 50% were suffering from moderate intensity of pain while 60% were having moderate symptoms according to DRSP.<sup>11</sup>

The literature has indicated that primary dysmenorrhea could have a substantial detrimental effect on productivity<sup>3</sup>. In Taiwanese adolescents, a focus group discussion reported reduced physical activity, modification in diet, and emotional problems due to PD<sup>12</sup>. In another study using VAS and SF 36 showed that primary dysmenorrhea-related symptoms have a negative impact on quality of life and work productivity as compared to non-dysmenorrhea. Dysmenorrhea is an important illness that primarily affects physical health; so domains of the SF-36 related to physical health could only be affected. Social and psychological parameters could not be affected due to this fact. These results are similar with those of the present study that physical function and role limitation due to physical health are associated with pain and other symptoms of dysmenorrhea<sup>13,14</sup>.

**Limitations of the Study:** Data was collected from one group of colleges so it cannot represent the whole community as compared to community-based studies. Physical function and role limitation was assessed only during symptomatic days so it cannot give any comparison with asymptomatic days. Further community-based studies should be conducted with larger sample size. Physical function and role limitation should be compared in symptomatic and asymptomatic days. Furthermore, impact on emotional health should also be assessed.

## CONCLUSION

The study concluded that pain and symptoms of primary dysmenorrhea significantly reduce quality of life related to physical health in study participants. It was also found that symptoms of dysmenorrhea affected work related productivity and efficiency among the participants

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