Reaffirming the Critical Role of Transformative Research and Knowledge Production in the Age of Post-Truth

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Determining the Occurrence and Effect of Dysmenorrhea on the Productivity of IDs 121 & 122 Female DLSU-IS Students Manila

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Abstract: Dysmenorrhea, the abdominal pain experienced during menstruation, has been prevalent in a vast percentage of women across the globe. Numerous studies stated that dysmenorrhea has taken a toll on the productivity of women, and further develops into a public health problem that negatively affects the economy. Inspired by this, the study aimed to determine the effect of the different intensity levels of dysmenorrhea and various applications of coping mechanisms in the productivity level of female IDs 121 and 122 students by means of distributing an online survey. The study gathered a sample of 78 respondents. Their responses were used for inference on the population proportion, Spearman's rank correlation coefficient, and Mann-Whitney U test. Upon conducting the study, with a confidence level of 90%, the interval from 71% to 86% is said to contain the true proportion of the DLSU SHS female students that follows a regular menstrual cycle and experience dysmenorrhea, and 88% to 99% was found to be using coping mechanisms during their menstrual cycle. Moreover, Spearman's rank correlation coefficient showed no correlation between the intensity level of dysmenorrhea and the productivity level before applying coping mechanisms. Finally, through the Mann-Whitney U test, a significant difference was found between the productivity levels before and after administering coping mechanisms. With these, the study concluded no correlation between the intensity of dysmenorrhea and productivity levels without coping mechanisms and a significant difference in the productivity level before and after applying coping mechanisms.

Keywords: dysmenorrhea; menstruation; intensity of dysmenorrhea; productivity; coping mechanisms

1. INTRODUCTION

Dysmenorrhea is the abdominal pain associated with menstruation wherein about 45% to 95% of menstruating women worldwide experience it (John Hopkins Medicine, 2019). The most accompanying symptoms of dysmenorrhea are cramps or pain in the lower abdomen, nausea, vomiting, diarrhea, fatigue, and weakness (John Hopkins Medicine, 2019). Furthermore, during menstruation, a woman's uterus—a muscle—contracts to expel its lining due to a hormone-like substance known as prostaglandins which can press against nearby blood vessels, cutting off blood flow and resulting in pain (Mayo Clinic, 2022 & Cleveland Clinic, 2022).

Unfortunately, dysmenorrhea has a significant adverse effect on women's daily lives. The percentage of absences from a job or school reflects this influence. Additionally, dysmenorrhea may prevent women from engaging in social or athletic activities, and there have been emotional pressures connected to dysmenorrhea. A survey conducted by BMJ Open among 32 750 women aged between 15 to 45 who experience dysmenorrhea has accounted for the loss of productivity. In this process, the researchers considered the absenteeism and presenteeism of women in work and school (Maguire, 2011, as cited in Santana, 2022). Thus, dysmenorrhea is considered a public health problem affecting the economy (StatPearls, 2022).

However, other studies state that women opt to use

various coping strategies like using a hot compress, doing antalgic positions, diverting themselves, taking prescription drugs, sleeping, drinking, or eating, using essential oils, and exercising (Fernández-Martínez et al., 2020). This was further supported in his other studies wherein it stated that using the said coping mechanisms has aided in decreasing dysmenorrhea that, eventually increased the productivity level of female nursing students (Fernández-Martínez et al. 2022).

Despite being one of the most common disorders, dysmenorrhea is often left untreated. It was found that women usually do not seek help from professionals because of a lack of awareness of the various treatment options or the false idea that the pain is normal (Chen et al., 2017). Moreover, there is a shortage of Philippine studies on the topic of dysmenorrhea. Therefore, this study aims to bridge the gap by determining the effect of the different intensity levels of dysmenorrhea and the various applications of coping mechanisms on the functionality and productivity level of female STEM 122 and 121 students in DLSU - IS.

To achieve this, the study aimed to answer the following objectives: (1) to estimate the true proportion of the female students in DLSU - IS Manila who are experiencing dysmenorrhea, (2) to estimate the true proportion of the population for each chosen coping mechanism, (3) to assess whether the level of productivity of women is independent of the intensity level of dysmenorrhea they experience, and (4) to test if there is a difference in the productivity level of the female students before and after doing some coping mechanisms.

However, the scope was only limited to Grade 11 and 12 students of DLSU-IS Manila aged 15 to 20 years old who experience menstruation and dysmenorrhea. With this, any other trait not mentioned deems the individual unsuitable for the study, such as other gynecological disorders such as polycystic ovarian syndrome (PCOS) and ovarian cysts. Moreover, the researchers will only gather data from studies that were conducted in at least ten years to strengthen the research.

With this, the findings of the study will primarily benefit the welfare of women as it brings awareness about dysmenorrhea to the Filipino community. In addition to this, the institution may refer to the analyzed data from this study to create and improve the regulations in considering excused absences or pardons due to gynecological disorders experienced by Filipino teenagers. Moreover, government officials or volunteer groups serving the lower sector may take note of the identified common coping mechanisms women with dysmenorrhea use and include these in their relief plans for women.

2. METHODOLOGY

With reference to the provided population size of 356 DLSU-SHS (Manila) female students, the formula for a sample size (Eq. 1) was used with an error of 0.1, p=½, and a 90% confidence level. 68 respondents, with an additional 10% or 7 respondents (75) students from the population size are needed to reach accurate and adequate conclusions for the study.

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2} \qquad \text{(Eq. 1)}$$

The 8-section online survey was created in Google Forms and distributed through social media for random sampling. A few questions were referenced from the study "Productivity loss due to menstruation-related symptoms: a nationwide cross-sectional survey among 32 748 women" by Schoep et al. (2019). The questions in the survey include topics on the respondents' regularity of menstruation, the occurrence of dysmenorrhea, the effect of dysmenorrhea on their productivity, and their coping mechanisms for dysmenorrhea. Moreover, the types of questions were also based on similar research articles. The Likert scale used to measure the intensity of the respondents' blood flow, dysmenorrhea, and their productivity from 1-10, was based on the studies by Sima et al. (2022) and Ryde et al. (2022).

The researchers made use of the confidence interval for population proportion (Eq. 2), Spearman's rank correlation coefficient (Eq. 3), and the Mann-Whitney U test (Fig 1.4) for data analysis. The confidence interval for population proportion was used to estimate the true proportion of the target population (female students of DLSU-SHS Manila) and the population for each chosen coping mechanism. Spearman's rank correlation coefficient was used to check if there is a relation between the female's

productivity level and the intensity level they experience. The Mann-Whitney U test was used to determine if there was a difference in the female students' productivity level before and after executing their respective coping mechanisms for dysmenorrhea.

$$\hat{p} \pm z_{\frac{\alpha}{2}} = \frac{\hat{p}(1-\hat{p})}{n} \quad \text{(Eq. 2)}$$

$$\rho = \frac{6\Sigma d_i^2}{n(n^2-1)} \quad \text{(Eq. 3)}$$

$$U_x = mn + \frac{m(m+1)}{2} - R_x$$
$$U_y = mn + \frac{n(n+1)}{2} - R_y \quad \text{(Eq. 4)}$$

Tabulation and data analysis were conducted in Statistica. The following codes shown in Table 1 represent the variables used to present the results and discussion. The independent variable is dysmenorrhea, while the dependent variable is productivity.

Table 1. Variables and Descriptions

Variable Code	Variable Descriptions
MENSTRUATION	Experiencing menstruation
DYSME	Experiencing dysmenorrhea
OCCUR	Stage of occurrence of dysmenorrhea
FREQUENCY	Frequency of dysmenorrhea
DURATION	Duration of dysmenorrhea
INTENSITY	Intensity of dysmenorrhea
PROD	Productivity when experiencing dysmenorrhea
COPE	Coping mechanisms applied when experiencing dysmenorrhea
PROD_COPE	Productivity during dysmenorrhea when coping mechanisms are used

3. RESULTS AND DISCUSSION

This study included 78 DLSU-IS senior high school female students from five different strands and academic tracks, namely STEM, ABM, HUMSS, ADT, and SPT.

According to the data gathered, 25.6%, making up most of the population of respondents, started menstruating at the age of 12; 19 respondents (24.4%) started at the age of 13; 18 (23.1%) respondents started at the age of 11; and 11 (14.1%) respondents started their menstruation at the age of 10. Thus, the average mean age of the start of menstruation of the respondents is 9.75 years.

Table 2. Characteristics of female students (n = 78)

Category of menstrual cycle and if experiencing dysmenorrhea	**Tally of respondents**	**Percentage**
Dysmenorrhea and has regular cycle	61	78.2%
Dysmenorrhea and has irregular cycle	5	6.4%
No dysmenorrhea but has regular cycle	7	9%
No dysmenorrhea and has irregular cycle	5	6.4%

Total	78	100%

Among the 78 research participants in this study, 61 (78.2%) of them answered that they experience dysmenorrhea and have a regular cycle, and 5 or 6.4% experience dysmenorrhea and are on an irregular cycle. On the other hand, 7 or 9.7% of the respondents do not experience dysmenorrhea but have a regular cycle, and 5 or 6.4% answered that they do not have dysmenorrhea and, at the same time, with an irregular cycle. From this, the estimated true proportion of female students in DLSU - IS Manila that experience dysmenorrhea and have a regular menstrual cycle obtained from the confidence interval formula was (0.71, 0.86). With a confidence level of 90%, approximately 71% to 86% of the female Lasallian senior high school student population has a regular menstrual cycle and deals with dysmenorrhea, whereas an estimated true proportion of 2% to 11% or (0.02, 0.11) experience dysmenorrhea while having an irregular cycle. Moreover, a calculated 4% to 14% (0.04, 0.14) of the population do not experience dysmenorrhea and have a regular menstrual cycle, while female students who do not experience dysmenorrhea and have an irregular cycle was estimated to be between 2% and 11% or (0.02, 0.11).

With this, the study determined the number of female students using coping mechanisms whenever they experience dysmenorrhea, as shown in Table 3.

Table 3. The number of female students who uses coping mechanisms

Making use of coping mechanisms when experiencing dysmenorrhea	Tally of Respondents	Percentage
Yes	57	93.4%
No	4	6.6%

Out of 61 respondents, 57 (93.4%) answered that they use coping mechanisms whenever they experience dysmenorrhea. Using the confidence interval formula, it was determined that an estimated true proportion of 88% to 99% (0.88, 0.99) of female DLSU SHS students with regular menstrual cycles use coping mechanisms to manage their dysmenorrhea.

Table 4 shows the preferred coping mechanisms of the 57 respondents and their corresponding percentages, namely using a hot compress, doing antalgic positions, distracting oneself with other activities, taking prescribed medications, sleeping, drinking or eating, using essential oils, and exercising. The method of using a hot compress was the most common one, with 47 (77%) respondents. Based on the confidence interval formula, the approximate true proportions of female students that use the above coping mechanisms during their dysmenorrhea are between 31% to 45% (0.31, 0.45) women who use hot compress, 10% to 21% or (0.10, 0.21) perform unnatural positions, 17% to 29% or (0.17, 0.29) distract themselves with other activities, 11% to 23% or (0.11, 0.23) take prescribed medications from doctors, 0.2% to 5% or (0.002, 0.05) use sleeping as a coping mechanism, 0.2% to 5% or (0.002, 0.05) drinks or eats to cope with the pain, 0% to 2% or (-0.01, 0.02) uses essential oils, and 0% to 2% or (-0.01, 0.02) exercises.

Table 4. The number of female students who chose each coping mechanism (n = 123)

Category of coping mechanism	Tally of Respondents	Percentage
Using hot compress	47	77%
Doing unnatural positions	19	31.1%
Looking for activities to distract yourself from the pain	28	45.9%

Intaking prescribed medication from doctor	21	34.4%
OTHERS (not specified in the questionnaire)		
Sleep	3	4.8%
Drinking or eating	3	4.8%
Using essential oil	1	1.6%
Exercising	1	1.6%

Next, the relationship of the intensity level of dysmenorrhea and the productivity level when dysmenorrhea is encountered were assessed. Consequently, using *Eq. 3*, the Spearman's rank correlation coefficient (ρ) was calculated to be approximately 0.0116 and 1.000000, which means that there is no correlation between the productivity level and intensity level of dysmenorrhea because it is close to 0 and that there is a perfect association of ranks, respectively, as shown in *Table 5*. This means there is no tendency for the productivity level before applying coping mechanisms to increase or decrease when the intensity of dysmenorrhea increases. However, it is also possible that other factors caused changes in the intensity of dysmenorrhea and productivity level.

Table 5. Relationship between the dysmenorrhea intensity level and the productivity level before applying coping mechanisms

	Intensity of dysmenorrhea	Productivity level before applying coping mechanism
Intensity of dysmenorrhea	1.000000	0.0116
Productivity level before applying coping mechanism	0.0116	1.000000

Following this, the Mann-Whitney U test was used to determine if there is a difference in the productivity level of the female students before and after applying their respective coping mechanisms. The p-value was computed to be 0.0874, which is less than the alpha level of 0.10. This means that the null hypothesis of there being no difference between the ranks of the productivity levels can be rejected. Hence, it can be concluded that there is a significant difference between the medians of the productivity levels before and after applying coping mechanisms.

4. CONCLUSIONS

In conclusion, Spearman's rank correlation coefficient (ρ) indicated that there was no correlation between the degree of productivity and the severity of dysmenorrhea which was determined to be approximately 0.0116. This was different from the study of Maguire, 2011, as cited in Santana, 2022, which indicated that there is an approximate decrease in productivity. However, it was also conceivable that other factors caused changes in the productivity levels that modified the severity of dysmenorrhea.

The Mann-Whitney U Test resulted in a significant difference between the production levels of female students before and after using coping mechanisms, as the null hypothesis was rejected. Regularly menstruating female DLSU SHS students utilized coping methods to treat their dysmenorrhea. This agrees with the study of Fernández-Martínez et al. (2022), which states that using various coping mechanisms leads to decreased menstrual pain that women experience, eventually resulting in increased productivity.

With these things considered, the findings revealed that there is an approximate true proportion of 71% to 86% of the female Lasallian senior high school student

population who has a regular menstrual cycle and deals with dysmenorrhea. While there is an estimated true proportion of 88% to 99% of the population that uses coping mechanisms to deal with their dysmenorrhea. Furthermore, a significant change in the productivity level after the coping mechanisms were utilized was also evident. Thus, there was no correlation between the intensity of dysmenorrhea and productivity levels without coping mechanisms and a significant difference in the productivity level before and after applying coping mechanisms.

On the other hand, to expand the scope and restrictions of the study, it is recommended to include a larger audience, such as college students, rather than restricting it to only senior high-school students. Furthermore, examine which coping mechanisms or methods are most beneficial and effective in decreasing the intensity of dysmenorrhea.

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