Journal of Obstetrics, Gynecology and Cancer Research | ISSN: 2476-5848

Efficacy of Working Ability, Location, Intensity, Days of Pain, Dysmenorrhea (WaLIDD) and Verbal Rating Scale (Pain and Drug) in Diagnosing and Predicting Severity of Dysmenorrhea among Adolescents: A Comparative Study

Farzaneh Rashidi Fakari[1], Masoumeh Simbar[2*], Golshan Tahmasebi[3], Abbas Ebadi[4], Fahimeh Rashidi Fakari[5], Malihe Nasiri[6], Masoumeh Ghazanfarpour[7]

1. *PhD, Assistant professor, Department of Midwifery, School of Medicine, North Khorasan University of Medical Sciences, Bojnurd, Iran*
2. *Professor, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran*
3. *MSc in Midwifery, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
4. *Professor, Behavioral Sciences Research Center, Faculty of Nursing, Lifestyle Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran*
5. *PhD, Student Research Committee, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran*
6. *Assistant Professor, Department of Biostatistics, School of Nursing & Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran*
7. *PhD, Student Research Committee, Kerman University of Medical Sciences, Kerman, Iran*

Article Info

10.30699/jogcr.6.2.80

Received: 2021/01/14;
Accepted: 2021/02/20;
Published Online: 5 May 2021;

Use your device to scan and read the article online

Corresponding Information:
Masoumeh Simbar,
Professor, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Email: rashidiff@gmail.com

ABSTRACT

Background & Objective: Menstruation with cramping pain is one of the problems that appear during adolescence. The severity of dysmenorrhea affects the extent of activity limitation. Given the high prevalence of dysmenorrhea in adolescents and the personal-social effect of this condition on their daily lives, using reliable tools for assessing the severity of this condition in different populations of different countries can significantly contribute to the standard diagnosis, evaluation, and treatment of people suffering from dysmenorrhea.

Materials & Methods: This cross-sectional study was performed on a population of adolescent girls (Iran) in 2019. The research was approved and monitored by the relevant supervisory body, which issued the pertinent ethics licenses and letters of introduction. Sampling was performed using the cluster method from public schools. Inclusion criteria were Iranian nationality and not having any underlying diseases. The exclusion criterion was the unwillingness to continue participation. The data collection tools were a questionnaire of demographic and menstrual information as well as verbal rating scale (VRS; for both drug and pain) and working ability, location, intensity, days of pain, dysmenorrhea (WaLIDD) questionnaires.

Results: The participants had a mean age of 15.6±2.3 years and a mean age of menarche of 12.5±1.3 years. The best sensitivity and specificity of the tools were respectively calculated as 63.7% and 56.9% for WaLIDD (at point 4.5), 57.3% and 70.8% for VRS (pain; at point 1.5), and 33.9% and 72.2% for VRS (drug; at point 0.5).

Conclusion: According to the results of this study, none of the tools had high specificity and sensitivity at the same time. However, WaLIDD had high sensitivity, and VRS (for both pain and drug) exhibited high specificity.

Keywords: Dysmenorrhea, Diagnosis, Adolescent

Introduction

Adolescence is a critical phase of life involving the transition from childhood to adulthood, which exposes a person to a wide variety of new issues and challenges (1). Menstruation with cramping pain is one of the problems that many girls start to experience during adolescence. This condition, clinically known as

primary dysmenorrhea, is a cyclic pain without pelvic pathology that begins in adolescence **(2)** and can be attributed to an increase in prostaglandins, followed by a reduction in uterine blood flow **(3)**. The prevalence of dysmenorrhea varies with the population and can range from 20% to 90% among adolescent girls **(4)**.

Dysmenorrhea can limit daily social, recreational, and educational activities, including and generally affects the quality of life of a person **(5)**. In the United States, 10%-30% of women have an experience of missing work because of primary dysmenorrhea, with an effect that has been estimated at 600 million work hours or $2 billion a year **(1, 6)**. In a study in Canada, people with dysmenorrhea were reported to have a 51% activity limitation **(7)**.

The extent of activity limitation due to dysmenorrhea depends on its severity **(8, 9)**. Therefore, this activity limitation (absence from work or education) can be predicted by measuring the severity of dysmenorrhea. The severity of dysmenorrhea is often measured by visual analog scale (VAS), numerical rating scale (NRS), and verbal rating scale (VRS). Many studies have used VAS for measuring the severity of dysmenorrhea **(10-12)**. However, this scale is both time-consuming and expensive to use for large samples **(9)**. NRS is easy and fast to administer and score but is difficult to interpret. One of the most commonly used VRSs is the McGill questionnaire, which contains illustrated representations of pain at different intensity levels. This type of scale requires more attention and therefore takes more time to complete **(13)**.

The existing reports regarding the validity of these scales (visual, numerical, verbal) are generally contradictory **(7, 9, 14, 15)**. Moreover, these scales measure only one aspect of pain—that is, pain intensity—while the severity of dysmenorrhea is also affected by other aspects of pain, most notably the location **(1)**.

Proposed in 2018 by Teherán *et al.,* working ability, location, intensity, days of pain, dysmenorrhea (WaLIDD; based on pain score and use of painkillers) is a combination of multiple scales, which has been developed with the goal of measuring the severity of dysmenorrhea and predicting the resultant activity limitation. WaLIDD has shown to have a much larger effect size than VAS **(16)**. However, before it can be used with confidence, this scale should be tested in different populations. This study aimed to compare the performance of WaLIDD and VRS (for both pain and drug) in diagnosing and predicting the severity of dysmenorrhea in Iranian adolescents.

Materials and Methods

Study Design

This cross-sectional research was carried out on a population of Iranian adolescent girls (10-19 years) in 2019. The research was approved and monitored by Shahid Beheshti University of Medical Sciences, which issued the pertinent ethics licenses and letters of introduction.

Based on a study by Kharaghani *et al*. **(17)**, the sample size was calculated as 207, and according to the prevalence formula and 95% CI, P (intensity of primary dysmenorrhea)=16%. Eleven adolescents dropped out of the study due to unwillingness, and the study was conducted on 196 adolescents.

Data Collection

Sampling was performed using the cluster method from public schools. Inclusion criteria were obtaining the informed consent of parents and adolescents to participate, having Iranian nationality, and not having any underlying disease (for adolescents). The exclusion criterion was the unwillingness of parents or adolescents to continue participation. Informed-consent forms were given to adolescents; they were asked to provide these forms at home to their parents to express their consent if they wished. In these forms, the purpose of the research and the content of the questionnaires were written.

The researcher provided the questionnaires to eligible adolescents, as well as the necessary explanations on how to complete the questionnaires, assuring them that their information would remain confidential. The questionnaires were completed by the adolescents and collected by the researcher.

A questionnaire was used to collect demographic and menstrual data, including age, age of menarche, length of last menstruation, having regular/irregular menstruation (does menstruation occur every month?), and length of the menstrual cycle.

VRS (for both pain and drug) was used to determine the severity of pain and the use of painkillers. The severity of pain Pain Relief Medications used was scored as follows: 0, no dysmenorrhea; 1, mild dysmenorrhea; 2, moderate dysmenorrhea; and 3, severe dysmenorrhea **(18)**. The validity and reliability of this tool have been confirmed in Iran **(19, 20)**.

The WaLIDD scale designed by Teherán et al. (2018) was used to diagnose dysmenorrhea. This four-scale scale includes four items: pain range, pain location, number of days of pain duration, disability and pain limitation, with a minimum score of zero for each item and a maximum score of 3.

. The minimum and maximum scores of the scale as a whole are 0 and 12, respectively. Depending on the total score obtained from WaLIDD, the severity of dysmenorrhea is classified as follows **(16)**: 0, no dysmenorrhea; 1-4, mild dysmenorrhea; 5-7, moderate dysmenorrhea; 8-12, severe dysmenorrhea.

Statistical Analysis

Data analysis was performed using SPSS 20 (SPSS Inc., Chicago, Ill., USA). Descriptive statistical tests and central tendency measures, including mean, were used for describing research variables.

Data normality was assessed using the Kolmogorov-Smirnov test. The data did not have a normal distribution. The Mann-Whitney test was used to compare means. The receiver operating characteristic (ROC) curves were also plotted to determine and compare the sensitivity and specificity of WaLIDD and VRS (for both pain and drug). The threshold of statistical significance was considered as P-value<0.05.

Results

A total of 196 adolescent girls participated in the study. The mean age (±SD) of participants was 15.6±2.3 years. The mean age of menarche in participants was 12.5±1.3 years. The mean length of last menstruation was 5.4±1.5 days, and the mean length of the menstrual cycle was 30.9±8.3 days.

The results of the Mann-Whitney test revealed a significant difference between participants with and without dysmenorrhea in terms of location, intensity, days of pain, activity limitation, and VRS (for pain; P<0.05; see Table 1).

Table 1: Comparison of dysmenorrhea characteristics in participants with and without dysmenorrhea

Variable	Score	Dysmenorrhea N(%)	Non-dysmenorrhea N(%)	P-value
Location	None	91(73.4)	65(90.3)	0.014
	1 site	23(18.5)	4(5.6)	
	2–3 sites	10(8.1)	3(4.2)	
Intensity	0	4(3.2)	22(30.6)	<0.0001
	1	45(36.3)	35(48.6)	
	2	62(50)	9(12.5)	
	3	13(10.5)	6(8.3)	
Days of pain	0	7(5.6)	26(36.1)	<0.0001
	1-2	67(54)	26(36.1)	
	3-4	33(26.6)	14(19.4)	
	5≥	17(13.7)	6(8.3)	
Activity limitation	0	14(11.3)	6(8.3)	<0.0001
	1	42(33.9)	14(19.4)	
	2	44(35.5)	18(25)	
	3	24(19.4)	34(47.2)	
VRS (Drug)	0	82(66.1)	52(72.2)	0.772
	1	25(20.2)	10(13.9)	
	2	13(10.5)	6(8.3)	
	3	4(3.2)	4(5.6)	
VRS (pain)	0	11(8.9)	22(30.6)	<0.0001
	1	42(33.9)	29(40.3)	
	2	38(30.6)	10(13.9)	
	3	33(26.6)	11(15.3)	

The ROC curve was plotted to evaluate the sensitivity and specificity of WaLIDD and VRS (for both pain and drug) in the diagnosis of dysmenorrhea (Figure 1). The area under the ROC curves for these scales was 0.656, 0.669, and 0.524, respectively.

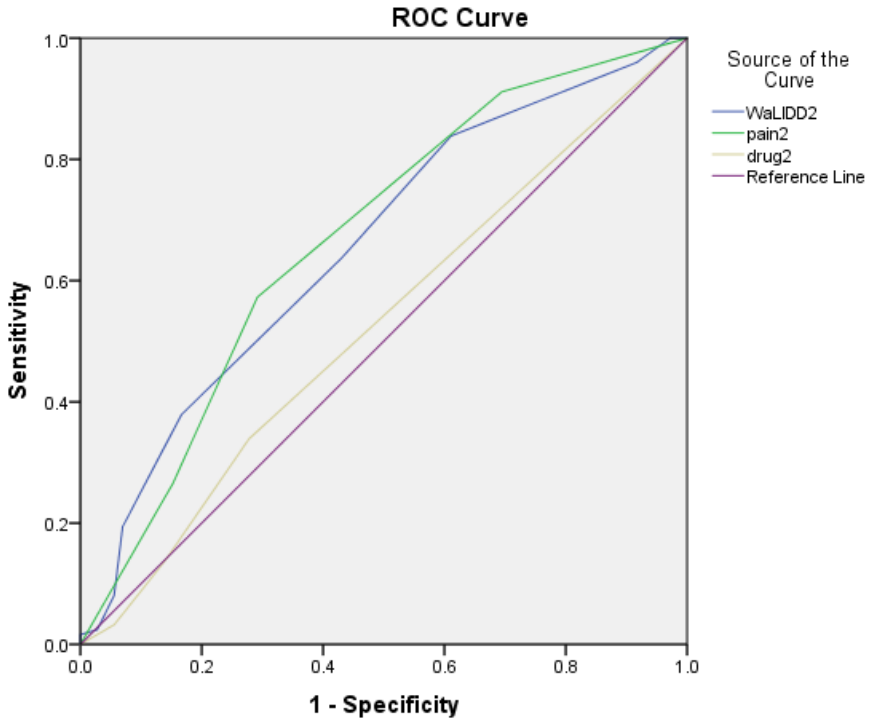

Figure 1: ROC curves for the evaluation of sensitivity and specificity of VRS (drug), VRS (pain) and WaLIDD in the diagnosis of dysmenorrhea

The sensitivity and specificity of the compared tools were calculated as 63.7% and 56.9% for WaLIDD (at point 4.5), 57.3% and 70.8% for VRS (pain; at point 1.5), and 33.9% and 72.2% for VRS (drug; at point 0.5).

The positive and negative predictive values of these tools were measured as 52.3% and 28.1% for WaLIDD, 50.9% and 22.8% for VRS (pain), and 61.1% and 32.2% for VRS (drug), respectively.

Discussion

In this study, a comparison was drawn between WaLIDD and VRS (for both pain and drug) in terms of efficacy in the diagnosis of dysmenorrhea severity, for the first time, among Iranian adolescents. The results showed that WaLIDD had high sensitivity, and VRS (for both pain and drug) showed high specificity in this application.

Hjermstad *et al*. (2011) believed that while many researchers use VRS because of its simplicity, this tool does not have enough sensitivity **(21)**. Williamson *et al*. (2005) reported that although VAS is more sensitive than NRS and VRS, it is actually less applicable and less clear, so much so that patients often end up asking more questions about how to answer questions **(22)**. The higher sensitivity of VAS means that it can detect the slightest decrease or increase in pain, but in the case of VRS, changes must be large enough for the tool to detect it **(23)**.

The study of Teherán *et al*. (2018) on female students showed that WaLIDD scores had a greater effect size than VRS (for both pain and drug) scores in diagnosis and prediction of dysmenorrhea, which is inconsistent with the results of the present study. In that study, the cut-off points of WaLIDD and VRS (for both pain and drug) were much higher than what was observed in the present work. This difference can perhaps be attributed to the difference in the age range of participants (adolescents vs young adults) and the difference in their pain intensity **(16)**.

The necessity of a reliable and objective tool for assessing pain is indisputable **(24)**. According to Younger *et al*. (2009), the research in this area is still ongoing, and it is likely to produce more objective tools for pain assessment in the future. However, until the development of reliable objective tools, we can still use the subjective tools for pain assessment with reasonable accuracy **(25)**.

The results of this study showed that while there are a variety of tools for assessing dysmenorrhea, there is still no golden standard for such an assessment. Therefore, researchers and clinicians have to carefully choose, at their own discretion, the most accurate and convenient

objective or subjective tool, which is most suitable for the target age, culture, and population **(23)**.

One of the limitations of this study was the disregard for the possible role of other factors that may affect the perceived pain and the responses to the pain assessment tool. Further research on the correlation between other existing tools for the assessment of dysmenorrhea is recommended.

Conclusion

According to the results of the present study, none of the tools had high specificity and sensitivity at the same time. However, WaLIDD had high sensitivity, and VRS (for both pain and drug) exhibited high specificity. Therefore, there is still no golden standard for dysmenorrhea severity assessment, and the most accurate and convenient objective or subjective tool has to be chosen based on suitability for the target age, culture, and population

Acknowledgments

We would like to thank all the teenagers, parents and everyone who helped us with this project

Conflict of Interest

The authors declare no conflict of interest in this study

References

1. Chen C, Kwekkeboom K, Ward SJEJoP. Self-report pain and symptom measures for primary dysmenorrhoea: A critical review. 2015;19(3):377-91. [DOI:10.1002/ejp.556] [PMID]
2. Davis AR, Westhoff CLJJop, gynecology a. Primary dysmenorrhea in adolescent girls and treatment with oral contraceptives. 2001;14(1):3-8. [DOI:10.1016/S1083-3188(00)00076-0]
3. Karthik C, Preetha S, Priya JJDIT. Impact of dysmenorrhea on academic performance in college girls. 2018;10(11).
4. Bahrami A, Sadeghnia H, Avan A, Mirmousavi SJ, Moslem A, Eslami S, et al. Neuropsychological function in relation to dysmenorrhea in adolescents. 2017;215:224-9. [DOI:10.1016/j.ejogrb.2017.06.030] [PMID]
5. Osayande AS, Mehulic SJAfp. Diagnosis and initial management of dysmenorrhea. 2014;89(5):341-6.
6. Dawood MYJTAjom. Nonsteroidal anti-inflammatory drugs and changing attitudes toward dysmenorrhea. 1988;84(5):23-9. [DOI:10.1016/0002-9343(88)90473-1]
7. Burnett MA, Antao V, Black A, Feldman K, Grenville A, Lea R, et al. Prevalence of primary dysmenorrhea in Canada. 2005;27(8):765-70. [DOI:10.1016/S1701-2163(16)30728-9]
8. Harada T, Momoeda M, Terakawa N, Taketani Y, Hoshiai HJF, sterility. Evaluation of a low-dose oral contraceptive pill for primary dysmenorrhea: a placebo-controlled, double-blind, randomized trial. 2011;95(6):1928-31. [DOI:10.1016/j.fertnstert.2011.02.045] [PMID]
9. Larroy CJBM. Comparing visual-analog and numeric scales for assessing menstrual pain. 2002;27(4):179-81. [DOI:10.1080/08964280209596043] [PMID]
10. Helwa HAA, Mitaeb AA, Al-Hamshri S, Sweileh WMJBwsh. Prevalence of dysmenorrhea and predictors of its pain intensity among Palestinian female university students. 2018;18(1):18. [DOI:10.1186/s12905-018-0516-1] [PMID] [PMCID]
11. Lewers D, Clelland JA, Jackson JR, Varner RE, Bergman JJPT. Transcutaneous electrical nerve stimulation in the relief of primary dysmenorrhea. 1989;69(1):3-9. [DOI:10.1093/ptj/69.1.3] [PMID]
12. Chen HM, Chen CHJJoan. Effects of acupressure at the Sanyinjiao point on primary dysmenorrhoea. 2004;48(4):380-7. [DOI:10.1111/j.1365-2648.2004.03236.x] [PMID]
13. Kahl C, Cleland JAJPtr. Visual analogue scale, numeric pain rating scale and the McGill Pain Questionnaire: an overview of psychometric properties. 2005;10(2):123-8. [DOI:10.1179/108331905X55776]
14. Teherán AA, Piñeros LG, Pulido F, Guatibonza MCMJIjowsh. WalIDD score, a new tool to diagnose dysmenorrhea and predict medical leave in university students. 2018;10:35. [DOI:10.2147/IJWH.S143510] [PMID] [PMCID]
15. Jensen MP, Karoly P, Braver SJP. The measurement of clinical pain intensity: a comparison of six methods. 1986;27(1):117-26. [DOI:10.1016/0304-3959(86)90228-9]
16. Teherán AA, Pineros LG, Pulido F, Guatibonza MCM. WalIDD score, a new tool to diagnose dysmenorrhea and predict medical leave in university students. International journal of women's health. 2018;10:35. [DOI:10.2147/IJWH.S143510] [PMID] [PMCID]

17. Kharaghani R, Damghanian M. The prevalence of dysmenorrhea in Iran: a systematic review and meta-analysis. 2017. [DOI:10.5812/ircmj.40856]

18. Jensen MP. Hypnosis for chronic pain management: Therapist guide: Oxford University Press; 2011. [DOI:10.1093/med:psych/9780199772377.001.0001]

19. Atallahi M, Akbari SAA, Mojab F, Majd HAJIRCMJ. Effects of wheat germ extract on the severity and systemic symptoms of primary dysmenorrhea: a randomized controlled clinical trial. 2014;16(8). [DOI:10.5812/ircmj.19503] [PMID] [PMCID]

20. Rad HA, Basirat Z, Bakouei F, Moghadamnia AA, Khafri S, Kotenaei ZF, et al. Effect of ginger and novafen on menstrual pain: A cross-over trial. 2018;57(6):806-9. [DOI:10.1016/j.tjog.2018.10.006] [PMID]

21. Hjermstad MJ, Fayers PM, Haugen DF, Caraceni A, Hanks GW, Loge JH, et al. Studies comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for assessment of pain intensity in adults: a systematic literature review. 2011;41(6):1073-93. [DOI:10.1016/j.jpainsymman.2010.08.016] [PMID]

22. Williamson A, Hoggart BJJocn. Pain: a review of three commonly used pain rating scales. 2005;14(7):798-804. [DOI:10.1111/j.1365-2702.2005.01121.x] [PMID]

23. Zahedifard T, Firozi MJTIJoO, Gynecology, Infertility. Assessment of the articles related to primary dysmenorrhea in dimension of menstrual pain assessment tools. 2016;19(4):17-27.

24. Aziato L, Dedey F, Marfo K, Asamani JA, Clegg-Lamptey JNAJBn. Validation of three pain scales among adult postoperative patients in Ghana. 2015;14(1):42. [DOI:10.1186/s12912-015-0094-6] [PMID] [PMCID]

25. Younger J, McCue R, Mackey SJCp, reports h. Pain outcomes: a brief review of instruments and techniques. 2009;13(1):39-43. [DOI:10.1007/s11916-009-0009-x] [PMID] [PMCID]

How to Cite This Article:

Rashidi Fakari F, Simbar M, Tahmasebi G, Ebadi A, Rashidi Fakari F, Nasiri M et al . Efficacy of working ability, location, intensity, days of pain, dysmenorrhea (WaLIDD) and Verbal Rating Scale (Pain and Drug) in Diagnosing and Predicting Severity of Dysmenorrhea among Adolescents: A Comparative Study. J Obstet Gynecol Cancer Res. 2021; 6 (2) :81-86

Download citation:
BibTeX | RIS | EndNote | Medlars | ProCite | Reference Manager | RefWorks