Literature Review: Effect of Peppermint on The Pain Level of Primary Dysmenorrhea

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Article Information	Abstract
	Dysmenorrhea is the most common menstrual disorder but is rarely understood by women. The pain experienced by women with dysmenorrhea causes discomfort and can affect mood. The aim of this study was to analyze the administration of peppermint therapy on the level and duration of primary dysmenorrhea pain. This study uses secondary data searched through the Science Direct, PubMed, and Pro-Quest databases, which discuss the effect of peppermint therapy to reduce dysmenorrhea pain. The study design of this research is Qualitative Systematic Literature Review. The research results showed 2 research articles that met the criteria stating that there was an effect of giving peppermint therapy on the level of dysmenorrhea pain.

INTRODUCTION

Dysmenorrhea is defined as pain that is natural and centered in the lower abdomen (Fritz & Speroff, 2011). WHO states the prevalence *dysmenorrhea* as much as 17% to 18%. This disorder is often experienced but often ignored by women (Santina et al., 2012). Dysmenorrhea is categorized into primary and secondary. Primary dysmenorrhea pain refers to pain without pathological pelvic disease, related to the ovulatory cycle and caused by contraction of the myomertrium. Pain during menstruation associated with endometriosis, adenomyosis is called secondary dysmenorrhea (Fritz & Speroff, 2011). This is experienced by women after a regular ovulation cycle (Ju et al., 2014).

Contraction of uterine smooth muscle causes spasmodic lower abdominal cramps and lower back pain typical of dysmenorrhea. Factors that influence menstrual pain include age, family history, and also age at menarche (Ju et al., 2014). Irregular menstruation or excessive bleeding and longer duration of menstrual bleeding have been reported as risks that may increase dysmenorrhea (Ryan, 2017).

Women who experience menstrual pain cause discomfort and can affect psychological aspects. The impacts of dysmenorrhea include decreased sleep quality, disruption of physical activity. For students, it will also disrupt learning activities including school attendance (Fernández-Martínez et al., 2019). Problem of dysmenorrhea is greater than other gynecological complaints and is the main cause of gynecological morbidity in women of reproductive age. The World Health Organization estimates that dysmenorrhea is a triggering factor for chronic pelvic pain (Petraglia et al., 2017).

So far *dysmenorrhea* treated with administration of Nonsteroidal Anti-inflammatory Drugs (NSAIDs). Pharmacological therapy for the treatment of primary dysmenorrhea is focused on reducing pain and restoring uterine performance (Gao et al., 2017). Side effects from pharmacological treatment are consistently reported, and there are some women who do not respond to NSAID treatment. As a result they stopped taking NSID drugs. They prefer to consume herbal medicine (Zahra Bajalan et al., 2019). Peppermint is a type of plant that is cultivated for its oil which is extracted from its leaves (Agajani

Delavar et al., 2019). The anti-spasmodic properties of mint leaves act as a sedative and can relieve tension during pain (Vasantha, 2012).

METHODS

The writing design of this study usesQualitative Systematic Literature Review using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) registration model. Article assessment uses the Cochrane Risk of Bias Tool protocol to assess article bias. Study quality was assessed using the United States Preventive Services Task Force. The article search began in January-May 2021. Database sources were obtained from PubMed, Science Direct, Proquest. Mendeley software is used to check duplication, if duplication occurs the article will be deleted by itself.

RESULTS

Eligibility assessment was carried out on 226 articles that met the eligibility criteria. At the end of the process there were 2 articles remaining that met the criteria. Respondents in this study were women who experienced primary dysmenorrhea, with regular menstrual cycles. The age range of respondents was between 12 – 32 years. The level of dysmenorrhea pain was measured using the VAS instrument.

a.   Study Characteristics and Respondents with Peppermint Herbal Therapy.

PThe research conducted by Hesmati and Masoumi has something in common, namely providing an intervention using peppermint extract, with an intervention duration of 2 menstrual cycles. The difference between these two studies lies in the study design, Hesmasti (Heshmati et al., 2016) used a double-blind placebo controlled clinical trial and Masoumi used a double-blind randomized crossover study. In this study there were differences in the intervention and comparison doses, namely Hesmati (Heshmati et al., 2016) used 330 mg peppermint extract + 170 mg starch 3x/day in the intervention group and placebo 500 mg starch 3x/day. The intervention group in Masoumi's study (Masoumi et al., 2016) was given peppermint oil capsules 1x/day on days 1 to 3 of menstruation in the first cycle, then in the second cycle 250 mg as capsules. Mefenamate. The same treatment was also given to the control group in a different order.

Table 1.1: Study Characteristics and Respondents with Peppermint Herbal Therapy

No.	Study	Country	Study Design	Population (n)	Age	Intervention (n)	Control (n)	Time Duration	Play Outcomes (Mean ± elementary school)
1	Hesmati, 2016	Iran	*A doubleblind placebo controlled clinical trial*	Female primary dysmenorrhea, moderate to severe, regular, single (n= 90)	18-26 years old	Peppermint extracts 330 mg + 170 mg starch 3x/day (46)	*Placebo* 500 mg starch 3x/day (44)	Every 8 hours for 2 menstrual cycles	**VASE** - *Intervention* = 3.28 ± 1.26 - *Controls*= 6.12 ± 1.47 - *P Value*= 0.008 **Duration** - *Intervention* = 5.03 ± 2.27 - *Control* = 5.67 ± 3.02 - *P Value* = 0.066
2	Masoumi, 2016	Iran	*A double-blind randomized crossover study*	Female, primary dysmenorrhea, regular, single (n= 126)	18-25 years old	Peppermint oil capsules 1x/day on days 1-3 of menstruation in the first cycle. Then in the second cycle, 250 mg capsule As. Mefenamate every 8 hours for 3 days (61)	Same with groups interventions in reverse order (61)	2 months	**VASE** - *Intervention* = 3.12 ± 1.87 - *Controls*= 2.82 ± 2.00 - *P Value*= 0.098 **Duration** - *Intervention* = 1.07 ± 1.06 - *Control* = 0.87± 0.91 - *P Value* = 0.17

Risk of Bias and Study Quality

All studies that met the inclusion and exclusion criteria for the systematic review were 6 articles. The Cochrane Risk of Bias Tool was used to assess the risk of bias of studies using 7 criteria. Based on the USPSTF there are 7 assessment criteria to assess the internal validity of a study. The results of the risk of bias assessment and study quality are explained as follows:

Figure 1.1: Study Risk of Bias Assessment Results for Peppermint
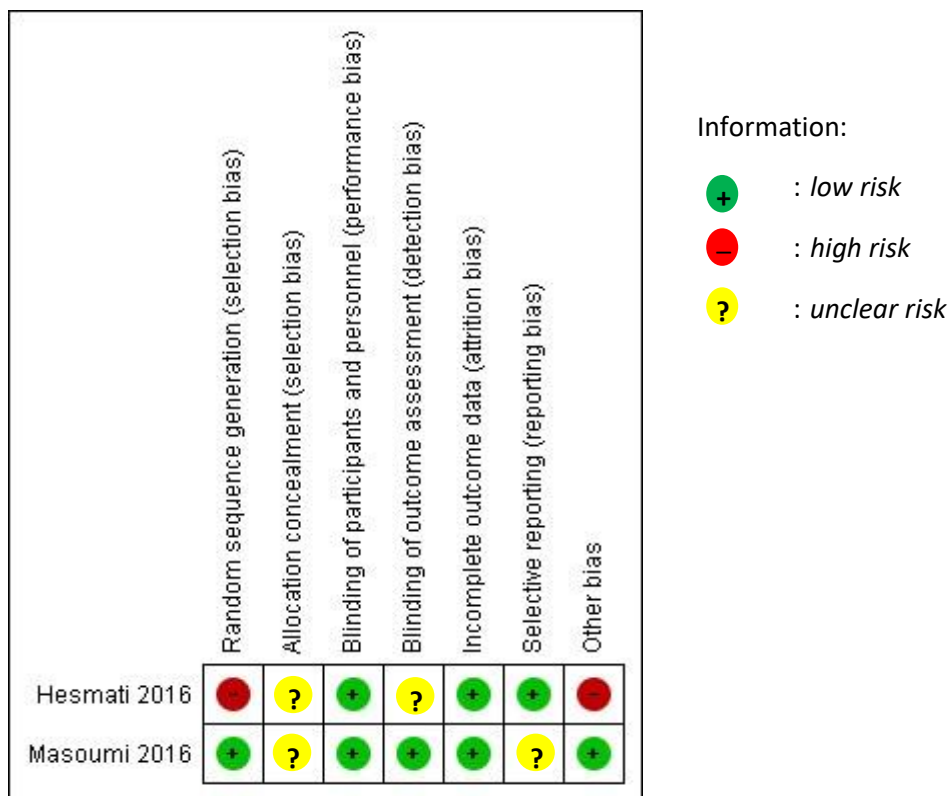
The results of the internal validity assessment based on USPSTF criteria in the study conducted by Hesmati (Heshmati et al., 2016) and Masoumi (Masoumi et al., 2016) were poor. This is because both studies did not use intention-to-treat (ITT) analysis in their studies.

Table 1.2: Results of internal validity assessment based on USPSTF criteria for RCT specific studies (Peppermint Herbal)

No.	Reference	Criteria							Result
		1	2	3	4	5	6	7	
1	Hesmati, 2016[69]	√	√	√	√	√	√	-	*Poor*
2	Masoumi, 2016[70]	√	√	√	√	√	√	-	*Poor*

DISCUSSION

The bias detection research carried out by Hesmati was in the unclear risk category and the research carried out by Masoumi was low risk. Hesmati's study falls into the low risk criteria and Masoumi's unclear risk falls into the selective reporting criteria. Exposure to risk bias results from the seven criteria, there are only two low risk categories, namely the performance bias and attrition bias criteria. Judging from the assessment of internal validity based on USPSTF criteria, both studies fall into the poor category.

Effect of Peppermint is that it can inhibit spasmodic activity in smooth muscles. This effect is able to inhibit smooth muscle contraction by blocking the entry of calcium into muscle cells. The menthol content in peppermint can induce a cooling sensation by activating TRPM8, a peripheral sensory ion channel that is sensitive to cold. TRPM8 is a major menthol-induced agonist and mediator of acute pain and inflammation. Mint can relax muscle aches and pain by producing similar desensitizing activity in the nerves. This is due to its anti-spasmodic effect and narcotic properties which can relieve tension during muscle pain (Dayana B A A & Sabeetha S, 2020).

This study shows that there is a significant change in the level of dysmenorrhea pain between the peppermint and non-peppermint herbal groups in the

meta-analysis results. These results are supported by research conducted by Dayana. In his research, it was stated that administering mint and fenugreek paste could reduce the level of dysmenorrhea pain in adolescent girls(Dayana B A A & Sabeetha S, 2020).From Masoumi's research, it was stated that symptoms of dysmenorrhea such as nausea, vomiting and diarrhea were fewer after those given the peppermint intervention compared to the control group. There have been no reports of side effects from peppermint in Hesmati's research.

CONCLUSION

Based on the results and discussion, It can be concluded that peppermint herbal can be considered as an alternative treatment for dysmenorrhea. Peppermint herbal therapy can reduce the level of primary dysmenorrhea pain in women of childbearing age.

SUGGESTIONS

It is necessary to carry out a similar meta-analysis follow-up study regarding the administration of other herbal therapies by increasing the number of articles or adding the latest articles to update the results regarding the effects of providing herbal therapy on the level and duration of pain.

ACKNOWLEDGEMENT

FUNDING

CONFLICTS OF INTEREST

The author declares no interest. Apart from the author, there are no external funders.

AUTHOR CONTRIBUTIONS

All author members are responsible for the process of writing this research.

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