

Motivational Intervention to Modify Knowledge about Periodontal Disease Prevention in Pregnant Women

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Abstract

Currently, periodontal disease during pregnancy is associated with gestational diabetes, low birth weight and preterm birth. This study was aimed to determine the difference in the level of knowledge about periodontal disease prevention, before and after applying a motivational educational intervention in pregnant women at a primary health care center.

Quasi-experimental study in 180 pregnant women from a health center, during the period September to December 2022. The data collection technique was a questionnaire survey with satisfactory characteristics of validity and reliability. An educational intervention with a motivational approach was developed, which was validated in a preliminary pilot test. The Wilcoxon statistical test was used to compare knowledge before and after intervention, and the Chi-square test to assess the association between variables.

The age and educational level that predominated were 21 to 30 years and complete secondary school, respectively. A significant difference was found between the level of knowledge before and after in pregnant women ($P < 0.001$). There was no association between the level of knowledge about periodontal disease prevention with age and educational level in pregnant women at the health center, before and after a motivational intervention ($P > 0.05$).

The motivational educational intervention managed to significantly improve the level of knowledge in pregnant women about the prevention of periodontal disease; however, it was not associated with age and educational level.

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Introduction

The gestational stage is characterized by a series of hormonal alterations that condition various physiological and immunological variations in women. The oral cavity is also affected by these variations that can contribute to the development of periodontal disease in pregnant women.^{1,2} Periodontal disease, which includes periodontitis and gingivitis, it is a

multifactorial infectious pathology with immunoinflammatory mechanisms that cause inflamed gum tissue, periodontal ligament, alveolar bone and cement.³ Worldwide, it has been identified in more than 30% of people from various communities and the prevalence on pregnant women represents between 5% and 20%.^{1,3} There is evidence that has associated periodontal disease with gestational diabetes, low birth weight, preeclampsia, miscarriage and childbirth premature.^{3,4}

These unfavorable outcomes for pregnant women together with the fact that future mothers have a fundamental role in learning healthy habits for their children from early ages, has meant that the education of pregnant women is a primary objective of public health programs.³ However, improving the knowledge of pregnant

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women still remains a challenge, due in part to the lack of interest of pregnant women in the prevention of oral diseases.^{2,4} In this sense, the challenge of improving oral health within primary care during antenatal check-ups is a pending task in public health policies.⁵⁻⁷

There is evidence to affirm that education and motivation strategies regarding correct oral hygiene habits can help maintain good oral health in future mothers and their infants.¹⁻³ This can be achieved through motivational educational interventions that have been shown to be effective on topics such as oral health, diet, and exercise.⁸⁻¹⁰ Compared to a traditional technique, the interview motivational suggests an intervention where learning is focused on identifying and remove barriers that prevent behavior modification and encourage the participant to reflect on changes that could be made from their own perspective to improve self-efficacy. When self-efficacy is improved, the chances of behavioral changes increases.¹¹⁻¹²

Therefore, the purpose of the study was to determine the difference in the level of knowledge about periodontal disease prevention, before and after applying an educational intervention with a motivational approach in pregnant women from a primary health care center.

Materials and methods

A quasi-experimental design study was carried out in a study population made up of 180 pregnant women from the "José Leonardo Ortiz" primary health care center, located in the province of Chiclayo, Peru; who participated in a motivational educational intervention from September to December 2022. Pregnant women of legal age, registered in antenatal care at the health center and at any stage of gestational age were included. Pregnant women with some previous training or orientation on the subject, with any physical or mental condition that make their participation difficult or who refused the invitation to participate were excluded. Pregnant women who did not complete their participation in the educational intervention were withdrawn from the research.

A questionnaire was developed to measure the level of knowledge about the prevention of periodontal disease aimed at pregnant women, which consists of 12 closed

questions with multiple alternatives and a single answer that generates values of high (9 to 12 points), intermediate (4 to 8 points) and low (0 to 3 points). The content validity of the questionnaire was obtained from the qualitative assessment provided by five judges specialized in the subject.

In a pilot study in 20 pregnant women, the reliability and temporal stability of the questionnaire was evaluated. The pregnant women who participated in the pilot study did not participate in the main study to avoid any type of information bias. The Kuder Richardson test was used to assess reliability and obtain a high coefficient ($r = 0.84$). In a test-retest technique, the paired t-test was used to confirm temporal stability of the questionnaire between measurements, with a non-significant variation (p -value = 0.23).

The collection of the pregnant women personal data was through the database provided by the health center. The participants were personally contacted during the antenatal check-ups scheduled, in order to explain the purpose of the study and obtain a signed informed consent. In the case of non-attendance at antenatal check-ups, they were contacted by telephone and an appointment was arranged at the health center.

A questionnaire (test) was applied to assess the level of baseline knowledge, prior to the intervention. Subsequently, sessions of educational activities with a motivational approach were carried out for four months and the questionnaire was applied again to the same participants (re-test). Likewise, other variables such as the age of the pregnant woman and educational level (before and after intervention) were evaluated.

An educational intervention was designed according to previous publications.^{12,13} The content of the educational intervention was validated by a periodontist, pediatric dentist and educator with experience in motivational approaches. In a pilot study, adaptation of the motivational intervention to the study population was carried out, as well as research team training. The activities began with a 30-minute introductory session in groups of 10 to 12 participants, with the purpose of explaining the objectives of the intervention, sequence of sessions, and schedule of activities.

In the first education session, research

team explained periodontal disease and its impact on pregnancy. Participants were asked about their initial concerns, information was provided about periodontal conditions that occur during pregnancy, and participants were encouraged to provide helpful ideas for managing these conditions. Appropriate ways to manage periodontal problems were explained and pregnant women described their current practices to prevent periodontal disease, so that they themselves internalize the need to change habits. In the second session, they were asked to rate the following on two scales from 1 to 10: the importance of changing habits and self-confidence in reaching the goal set by themselves. The participants explored the possible barriers to modifying behavior and offered possible solutions or options for behavior change, supported by constant monitoring and guidance by the research team.

Ethical approval

The protocol of the present study was reviewed and approved by the Ethics Committee of a university affiliated (RESOLUTION No. 117-2022-USAT-FMED). The pregnant women were informed about relevant aspects for their participation such as: objectives, procedures, benefits and potential dangers. The agreement of the pregnant woman who agreed to participate in the study was recorded by signing a written informed consent.

Statistical analysis

Each participant and their answers were coded in an Excel database. The statistical analysis was performed by using IBM SPSS® version 25. Univariate statistics were used to establish absolute and relative frequency distributions, and the Wilcoxon signed rank test to quantify the change before and after with a significance level of 5%. In addition, the Chi-square statistical test was used to find the association between the level of knowledge and covariates.

Results

The results show that 56.1% of the pregnant women were between 21 and 30 years of age, 26.7% less than 20 years of age, and 17.2% from 31 years of age or older. Regarding educational level, 49.4% had completed high school, 17.8% incomplete secondary, 16.7% completed higher education, 10% incomplete

higher education, and only 6.1% completed primary education.

Knowledge	Mean	Standard deviation	Wilcoxon p - value
Before	6.63	1.76	0.001
After	11.08	0.86	

Table 1. Knowledge about periodontal disease prevention, before and after a motivational intervention in pregnant women.

Table 1 shows that there is a significant difference in the knowledge of pregnant women, before and after receiving the motivational intervention, to confirm that knowledge about prevention has improved or increased in pregnant women.

Age group (years)	Knowledge before intervention						Chi-square			
	Low		Intermediate		High		Total	Value	p-value	
	f	%	f	%	f	%	f			%
< 20	5	55.6	38	25.5	5	22.7	48	26.7	4.907	0.297
21 - 30	4	44.4	84	56.4	13	59.1	101	56.1		
> 31	0	0	27	18.1	4	18.2	31	17.2		
Total	9	100.0	149	100.0	22	100.0	180	100.0		

Table 2. Association between the knowledge about periodontal disease prevention and age in pregnant women, before a motivational intervention.

Table 2 shows that before the intervention, most of the pregnant women who had a low level of knowledge were under 20 years of age. Likewise, the majority who had an intermediate or high level of knowledge were between 21 and 30 years old. Using the non-parametric test, it can be affirmed that there was no statistically significant association between the level of knowledge of pregnant women and age.

Age group (years)	Knowledge after intervention						Chi-square			
	Low		Intermediate		High		Total	Value	p-value	
	f	%	f	%	f	%	f			%
< 20	0	0	0	0	48	26.8	48	26.7	0.787	0.675
21 - 30	0	0	1	100	100	55.9	101	56.1		
> 31	0	0	0	0	31	17.3	31	17.2		
Total	0	0	1	100	179	100.0	180	100.0		

Table 3. Association between the knowledge about periodontal disease prevention and age in pregnant women, after a motivational intervention.

Table 3 shows that after the intervention, no pregnant woman presented a low level of knowledge. One pregnant woman had an intermediate level of knowledge, while the majority of pregnant women between 21 and 30

years old had a high level of knowledge. Using the non-parametric test, it can be affirmed that there was no statistically significant association between the level of knowledge of pregnant women and age.

no statistically significant association between the level of knowledge and educational level.

Educational level	Knowledge before intervention								Chi-square	
	Low		Intermediate		High		Total		Value	p-value
	f	%	f	%	F	%	f	%		
Completed primary	1	11.1	10	6.7	0	0	11	6.1	10.408	0.238
Completed secondary	5	55.6	75	50.3	9	40.9	89	49.4		
Not completed secondary	2	22.2	28	18.8	2	9.1	32	17.8		
Higher education	1	11.1	21	14.1	8	36.4	30	16.7		
Not completed higher education	0	0	15	10.1	3	13.6	18	10.0		
Total	9	100.0	149	100.0	22	100.0	180	100.0		

Table 4. Association between the knowledge about periodontal disease prevention and educational level in pregnant women, before a motivational intervention.

Table 4 shows that before the intervention, most of the pregnant women with low, intermediate or high level of knowledge, had a complete secondary level. Using the non-parametric test, it can be affirmed that there was no statistically significant association between the level of knowledge of pregnant women and educational level.

Educational level	Knowledge after intervention								Chi-square	
	Low		Intermediate		High		Total		Value	p-value
	f	%	f	%	F	%	f	%		
Completed primary	0	0	0	0	11	6.1	11	6.1	9.050	0.060
Completed secondary	0	0	0	0	89	49.7	89	49.4		
Not completed secondary	0	0	0	0	32	17.9	32	17.8		
Higher education	0	0	0	0	30	16.8	30	16.7		
Not completed higher education	0	0	1	100	17	9.5	18	10.0		
Total	0	0	1	100	179	100.0	180	100.0		

Table 5. Association between the knowledge about periodontal disease prevention and educational level in pregnant women, after a motivational intervention.

Table 5 shows that after the intervention, no pregnant woman obtained low knowledge. One pregnant woman with moderate knowledge, had an incomplete higher education level. Most of the pregnant women with a high knowledge had complete secondary level. Using the non-parametric test, it can be affirmed that there was

Discussion

The publications with available data regarding beliefs, quality of life, knowledge and oral hygiene of pregnant women show that the existence of documents related to plans, policies and strategies in oral health do not guarantee a decrease in epidemiological indicators in this population group.¹⁴⁻¹⁶ Thus, this research shows motivational interventions as a useful and practical tool at the level of primary care in perinatal health.^{8,12,17}

The results obtained in the present investigation indicated that it was successful in achieving the main objective with respect to improving knowledge about periodontal disease prevention. The change in knowledge can be explained from the perception reported by the pregnant women themselves of participating in educational activities and recognizing oral health education as a useful strategy to address the deficiencies of the comprehensive health care model for pregnant women.¹⁸ The results are confirmed with the findings of other studies that show an improvement of the percentage values in the level of knowledge.^{10,19,20} This includes a study that reports an affective-participatory approach, similar to the present study,¹⁹ and another study that agrees with establishing a statistically significant improvement.¹⁰ These similarities can be understood because innovative interventions have left the traditional model to focus on the self-management of the participants to respond to their own needs according to their condition, even in small groups.^{12,13}

It is also evident that both the educational level and age of pregnant woman were not related to the knowledge about the prevention of periodontal disease, before intervention and neither after. In the characteristics, pregnant women with an age between 21 to 30 years and a complete secondary educational level predominate, through all levels of knowledge for the prevention of periodontal disease. Previous studies in other countries have reported a higher frequency of pregnant women with medium and higher technical educational level, in addition to using a dichotomous category to assess knowledge. Likewise, the pregnant women in the investigations were cared for in

care centers with greater coverage, such as a polyclinic and a hospital.^{10,20} Other studies have shown a slightly variable similarity with respect to the age range in pregnant women with sufficient or insufficient knowledge, especially towards the second decade of life.^{10,19,20} This can be explained due to the influence exerted by cultural variations on pregnant women who access health services at different levels of care, in addition to confirming the frequency of pregnant women in the third decade of life regardless of geographic location.^{21,22}

As strengths of the present investigation are the acceptance of the intervention program to recruit and maintain a number of participants for a very specific topic such as the prevention of periodontal disease, where other investigations report less participation at the end of the intervention.^{10,19,20} The results obtained demonstrate the advantages that a motivational approach can offer in prevention of chronic diseases, not only in final effect but also for development of the intervention. Among the limitations, there is the non-randomization because it is a group formed in the health center before the start of this investigation, in addition to the lack of a control group. It should also be considered that the conclusions obtained are only valid for the study population with specific socioeconomic and cultural characteristics.

Conclusions

It is concluded that knowledge about the prevention of periodontal disease in pregnant women increased significantly after an educational intervention based on motivational interview sessions with a total duration of 4 months. It was also verified that the knowledge before or after the intervention was independent of the age and educational level of the pregnant woman.

Declaration of Interest

The authors declare that they have no competence in economic or personal interests that may have influenced the findings from this research.

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