Effect of structured nursing intervention on smoking cessation in smoking women
Efecto de una intervención estructurada de enfermería en disminución del hábito tabáquico en mujeres fumadoras

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ABSTRACT:
Introduction: Tobacco consumption is associated with an increase in female morbidity and mortality. This habit also implies deterioration in the quality of life related to health. The purpose of this research was to determine the effect of a structured intervention that motivated women to reduce their daily consumption of cigarettes and improve their quality of life.
Method: Experimental design with pre-test-post-test and control group with allocation of the groups at random. Out of 120 people, the two groups were approved with five characteristics. The sample was homologated again because the home interview was answered by only 64 people. The intervention group consisted of 10 women between 18 and 65 years old from the Bio-Bio region, and the control group by 20 women. A semi-structured questionnaire with sociodemographic characteristics, test, questionnaires and scales that measured the variables associated with consumption, and subjective and behavioral guidelines, with prior informed consent, was applied. The structured intervention consisted of: active learning methods, counseling with emphasis on strengthening the perception of self-efficacy.
Results: The difference of means in time and the difference of means between the groups (treatment group and control group) is of almost 5 cigarettes (4,8). This interaction (time-group) results has a level of significance less than one in ten thousand.
Conclusions: This intervention requires periodic reinforcement to achieve smoking cessation and affect the quality of life related to health of women with smoking.

Keywords: Intervention; quality of life; Smoking habit; women.

RESUMEN:
Introducción: El consumo del tabaco está asociado al incremento de la morbidad y la mortalidad femenina. Este hábito implica además un deterioro en la calidad de vida relacionada con salud. El
propósito de esta investigación fue determinar el efecto de una intervención estructurada que motivara a las mujeres a disminuir el consumo diario de cigarrillos y mejorar su calidad de vida.

**Método:** Diseño experimental con preprueba-postprueba y grupo de control con asignación de los grupos al azar. De 120 personas se homologaron los dos grupos con cinco características, se homologó nuevamente la muestra porque respondieron la entrevista en domicilio sólo 64 personas. El grupo intervención estuvo constituido por 10 mujeres entre 18 y 65 años de la región del Bio-Bío, y el grupo control por 20 mujeres. Se aplicó un cuestionario semiestructurado de características sociodemográficas, de test, cuestionarios y escalas que midieron las variables asociadas al consumo, y las orientaciones subjetivas y conductuales, previo consentimiento informado. La intervención estructurada estuvo conformada por: métodos activos de aprendizaje, consejería con énfasis en el fortalecimiento de la percepción de autoeficacia.

**Resultados:** La diferencia de medias en el tiempo y la diferencia de medias entre los grupos (grupo tratamiento y grupo control) es de casi 5 cigarrillos (4,8), esta interacción (tiempo-grupo) resulta a un nivel de significación menor al uno por diez mil.

**Conclusiones:** Esta intervención requiere de reforzamiento periódico hasta lograr la deshabitación tabáquica e incidir en la calidad de vida relacionada con salud de las mujeres con hábito tabáquico.

**Palabras clave:** Intervención; calidad de vida; Hábito tabáquico; mujeres.

**INTRODUCTION**

Currently, smoking is considered a chronic disease, as well as one of the greatest health problems in the health of people and therefore, in the public health of the countries\(^1\).

Tobacco was a preferably habit of males\(^2,3\). Different authors point out that the women started to smoke tobacco as a symbol of thee equality provided by the feminist movement, which began at the end of the nineteenth century to achieve legal equality (the right to female’s suffrage) and equality of conditions at work\(^4,5\).

Tobacco companies strategically have taken advantage of these changes in the woman and publicized tobacco consumption associated to women’s liberation, autonomy and gender equality\(^5,6\).

It is estimated that between 1950 and 2000, ten million women died worldwide due to tobacco consumption. Currently, this figure is around one million per year. It has also been observed that due to their biological consequences, they are more vulnerable to the negative effects of tobacco\(^7\).

National studies account for the increase in cigarette consumption in the general population and particularly in women. It is estimated that because of this habit, 45 people die per day, between women and men, despite the health policies in the prevention of smoking\(^8\).

At Latin American level, the prevalence of consumption is higher in Chile, both in adult population (41%) and adolescents aged 13 to 15 years (35.1%), respect to results from other countries\(^1\).

Specifically, Chilean Women older than 15 years are in the group of women who consume more tobacco in the world and the first in Latin America\(^9\). It is even more alarming that the prevalence of tobacco consumption in adolescents aged between 13 and 15 years, who lead tobacco consumption in the world with 39.80%\(^9\).
In the last study of drugs in the general population it was observed an increase in the daily consumption in women in 2014 (22.2%) respect to 2012 (20.1%). These values are similar to those observed in the consumption of men\textsuperscript{(10)}. With these figures, a gradual increase in the cigarette consumption is foreseen and with it, an increase in the consequences of this habit.

The increase in tobacco consumption in women has brought negative consequences for their health. Among the ten major causes of specific death, six of them would be related to tobacco consumption. These would correspond to cerebrovascular, ischemic heart and hypertensive diseases, pneumonia, urinary system diseases, and chronic diseases of the lower respiratory tract\textsuperscript{(8)}.

Studies show that those who consume tobacco report a lower quality of life respect to those without this habit\textsuperscript{(11,12)}.

With regard to studies about the use of interventions to achieve smoking cessation and impact on the quality of life of people, these are diverse, such as educational programs, brief advice, and pharmacological therapy among others\textsuperscript{(12)}. There is a consensus that the motivational interview and behavioral cognitive strategies are those that should be used by the professionals in order to achieve a change in the behavior of smokers\textsuperscript{(13)}. \textit{It is clear that interventions carried out by health professionals have a positive impact on the health of people}\textsuperscript{(14)}. Reinforcement with telephone calls is very important\textsuperscript{(15)}.

The World Health Organization (2010)\textsuperscript{(7)} proposed six tobacco control measures called MPOWER, which demonstrated its effectiveness to reduce its consumption. Two measures can be highlighted in this study: offer help to quit tobacco and warn about its dangers.

The analyzed studies highlight the importance of performing an intervention that considers an educational program that valuates the motivation of the person and promotes its self-efficacy for changing the smoking behavior, being a personal decision that could benefit their quality of life.

This motivated to perform this study, whose hypothesis was: A structured intervention has positive effects on the cessation of smoking habit and the quality of life of women who smoke.

The intervention was based on the Model of Quality of Life Related to Health, the Trans-theoretical Model of Change and the Theory of Planned Behavior. These conceptual schemes allow targeting the intervention and thus, decrease tobacco consumption and improve the quality of life of women.

**METHOD**

Experimental design with pre-test, post-test and control group (with randomly allocated groups)\textsuperscript{(15)}. According to Hernández, Fernández & Baptista (2003)\textsuperscript{(15)} the pre-test allows evaluating if the randomization was adequate. This is very important when working with small groups of 15 people or less. In addition, it allows analyzing if there are differences between the pre-test and post-test scores. In this case, internal validity must be determined\textsuperscript{(16)}.
The Structured Intervention was constructed based on evidences recommended as efficient in reducing the smoking habit in different contexts both national and international. Subsequently, expert peer evaluation was requested.

The intervention areas were as follows:

- Education for health through active learning methods.
- Counseling with emphasis on strengthening the perception of self-efficacy.
- Regular telephone calls for reinforcement.
- Didactic support material.
- Personalized interview.

The universe was made up by a total of 211 with smoking habit, of 18 to 65 years of age, assigned to the Cardiovascular Program of 4 Family Health Centers (CESFAM) in the Concepción commune, Biobío Region.

The sample was determined considering all Health Centers of Concepción and through a random selection of them, four Health Centers were chosen. From the databases and prior authorization, the people were selected. Women with chronic pathologies and psychiatric diseases were excluded.

The files of the women were chosen (random numbers) in each center at a proportional percentage, consisting of 120 women with smoking habits. Two random groups were formed on this sample, each of 60 women (group A and group B). In order to verify the equality of the groups, the t-student statistical test was carried out. Groups A and B were formed having similar characteristics of age, size, body mass index, systolic pressure and waist circumference. There were no differences between the means of the characteristics of both groups, according to the test of difference of means, the p value was higher than 0.05 (p > 0.05).

In the sample there was a loss of 53.33% due to several reasons. In total, 64 women were interviewed at home.

A total of 30 people from group A and 34 from Group B responded the pre-test. The experimental sample was finally made up by 10 women (A) who participated in the intervention and 20 women who acted indirectly as a control or comparison group (B). The group that participated directly in the intervention did so through group workshops (8 sessions) lasting 45 minutes. The women who integrated the groups (experimental and control) were evaluates at the beginning and 3 months after the intervention.

The dependent variables of the study were the consumption of cigarettes and the quality of life, related to health (analyzed in their components physical health (PHC) and mental health (MHC). On the other hand, the main independent variable was the structures intervention (interactions between the researcher-facilitator and the women smokers who participated of the intervention through workshops). In addition, other socioeconomic variables (age, number of children, level of study, marital status and religion); subjective and behavioral orientations (perception of self-efficacy, Health promoter lifestyle); variables associated to tobacco consumption (number of years smoking, age of onset of smoking, number of attempts to quit smoking, period without smoking, resistance of urge to smoke, motivation to quit smoking, reasons why the participant smokes and physical dependency to nicotine).
The data collection instrument was made up of: Semi-structured questionnaire of sociodemographic variables, Questionnaire SF-36 \((17)\) General self-efficacy perception scale \((18)\), Health promoter lifestyle questionnaire \((21)\), Health promoter lifestyle questionnaire II \((19)\), Questionnaire of urgency to quit smoking \((20)\), Motivation test to quit smoking and Questionnaire to measure to measure dependence to nicotine \((22)\) to measure the study variables.

The instrument was applied before and after the intervention through a personalized interview by the researcher and trained university students, in the home of women smokers, with their informed consent.

A pilot test was carried out in a group of 45 women with characteristics similar to that of the sample, assigned to a Health Family Center of the commune of Concepción, to whom the instrument developed for the research was applied.

Data were processed in a computer system, in S.P.S.S software version 15.0 and in SAS 91 software of the Department of Statistics of the University of Concepción.

Treatment analysis: To determine the effect of the intervention in the experimental group and its comparison with the control group, the student-t test was used. On the other hand, to establish the group-time interaction, difference in difference was used.

This protocol was reviewed by the Ethics Committee of the Faculty of Medicine and authorizations were requested to the Director of the Family Health Center and Director of the Health Municipal Administration.

**RESULTS**

The internal consistency of the measurement instruments used in this research was high, with a Cronbach’s alpha value of 0.80 for the Physical and Mental Health components, the General Self-Efficacy Perception scale, the EVPS II questionnaire, the Resistance questionnaire for the Urgency to smoke. The reliability for the Motivation Test to stop smoking and physical dependence on nicotine was acceptable.

**Phase: Intervention**

A total of 10 women belonging to group A responded to the invitation to participate in the structured intervention. They constituted the treatment group and participated directly in the intervention. Of the women of group B who responded the pre-test, only 20 participated in the second intervention or post-test, fulfilling the function of comparison group and acting indirectly in order to detect the effects of the intervention. The women of the treatment group reported having an average of 46.58 years, slightly lower in age with the women of the control group, with 38.27 years. These differences are not statistically significant according to the p value of 0.082.

Both, the women in the treatment group and those of the control group expressed having a sufficient lifestyle. They perceive themselves with high self-esteem, declared themselves to be responsible with their health, to maintain a sufficient nutrition, to feel good spiritually and with good interpersonal relationships. However, they expressed having insufficient physical activity and stress management.

On the other hand, the women of the treatment group perceive themselves with lower physical and mental health than women of the control group.
The time that women of the treatment group have been smoking is in average of 23.80 years, fluctuating between ± 8.87, and that of the control group is 17.68, between 5.02 and 30.34 years. These differences are not statistically significant and the p value was 0.183. There similar values in both groups with respect to the times they have tried to stop smoking in the last two years (Table 1).

The women of treatment group were in average 9 days without smoking the last time they tried. On the other hand, women of the control group remained less time without smoking. These differences are not statistically significant, according to the p value of 0.636.

Similar values were achieved by women of both groups in the Resistance test of urgency to smoke. In average, they achieve 40 points, that is to say that women oppose little resistance to smoking when facing certain situations such as sharing or feeling tense, among others.

The women of the treatment group report a low motivation to quit smoking (average 6 points), just like those of the control group, who obtained 5 points in the Richmond’s test.

Both women of the treatment and control groups declare smoking for pleasant as well as unpleasant feelings. Likewise, they report that the motives to quit smoking would be due to their health.

Regarding nicotine dependence, women of the control group scored an average of 1.50 points in the Fagerström test. On the other hand, the value achieved by the women in the control group was slightly higher (1.85), being considered a low nicotine dependence in both cases.

In average, women of the treatment group smoke two cigarettes a day more than those in the control group.

In the analysis of this table, it can be observed that women of the control and treatment groups have similar characteristics of tobacco consumption in the first measurement.

In general, all these characteristics of the smoking habit between women of both groups present no statistically significant differences (Table 1).

<table>
<thead>
<tr>
<th>Table 1: Comparison of the tobacco consumption characteristics of the women of treatment group (RG1) and control group (RG2) in the pre-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG1</td>
</tr>
<tr>
<td>N = 10</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Number of years smoking</td>
</tr>
<tr>
<td>Number of attempts to quit smoking</td>
</tr>
</tbody>
</table>
Period without smoking (days) | 8.94 | 13.55 | 6.19 | 11.29 | 0.482 | 0.636
Resistance of urgency to smoke | 40.07 | 20.42 | 41.71 | 26.38 | -0.172 | 0.864
Motivation to quit smoking | 6.10 | 1.20 | 5.00 | 2.05 | 1.559 | 0.130
Reasons why you want to quit smoking is (1=family; 2=health; 3=does not want) | 2 | 0 | 2.10 | 0.45 | -0.701 | 0.489
Reasons for smoking (0=Unpleasant reason; 1=pleasant reasons) | 0.40 | 0.52 | 0.50 | 0.51 | -0.502 | 0.622
Nicotine dependence | 1.50 | 1.58 | 1.85 | 2.23 | -0.442 | 0.662
Consumption of daily cigarettes | 8.80 | 6.63 | 6.60 | 6.44 | 0.873 | 0.390

Source: own

**Final phase: Result of the intervention effect**

The women of the treatment group in the pre-test reported smoking an average of 9 cigarettes a day and in the post-test they decreased their consumption by an average of 4 (3.80) cigarettes. The difference of the tobacco consumption between these two measurements over time was in average of 5 cigarettes a day in the group that participated in the intervention (Table 2).

**Table 2:** Comparison of the daily tobacco consumption of the women of the treatment group (RG₁) and control group (RG₂) in the post-test

<table>
<thead>
<tr>
<th></th>
<th>RG₁</th>
<th>RG₂</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td></td>
<td>0₁</td>
<td>0₂</td>
</tr>
<tr>
<td>Means</td>
<td>8.80</td>
<td>3.80</td>
</tr>
<tr>
<td>Difference of means</td>
<td>-5.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: own

On the other hand, the women of the control Group in the pre-test expressed smoking in average 7 cigarettes per day, slightly lower than the consumption expressed in the post-test (6.40). The difference in the daily consumption over time was minimal, of 0.20 cigarettes per day as average.

The difference of means in the cigarette consumption of the treatment group over time (before and after participating in the intervention) was 5 cigarettes (Table 3).
Table 3: Difference in difference of the daily cigarette consumption between treatment group and control group, pre-test and post-test

<table>
<thead>
<tr>
<th></th>
<th>Treatment Group</th>
<th>Control Group</th>
<th>Comparison</th>
<th>Differences of means</th>
<th>Differences of means</th>
<th>Difference in differences</th>
<th>Student-t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily cigarette consumption</td>
<td>N=10</td>
<td>N=20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-5.0</td>
<td>-0.2</td>
<td>4.8</td>
<td>6.22</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own p < 0.05

In the control Group, the consumption reduction was less than one cigarette (0.2) in the time between the second measurement with respect to the first measurement.

The difference of means over time and the difference of means between the groups (treatment and control group) is almost 5 cigarettes (4.8). This intervention (time-group) is at a significance level lower than one per ten thousand. This means that the behavior is highly significant, showing that is attributable to the intervention or treatment (Table 3).

Some women of the control group increased daily cigarette consumption respect o the first measurement. On the other hand, those who participated in the intervention decrease the consumption and even 4 of them stopped smoking.

The women of both groups slightly increased their average scores in PHC and MHC (components of the health-related quality of life) tough this relation was not statistically significant. Consequently, neither the Physical Health Component nor the Mental Health Component became effective for the case of the health-related quality of life.

Women who were successful in decreasing the daily consumption of cigarettes are perceived as having good self-efficacy and slightly increased the average respect to the first measurement. They declare a lifestyle that promotes sufficient health and they are perceived as responsible with their health, with low physical activity, good nutrition, well spiritually, and with an insufficient stress management.

By comparing the average scores achieved in both measurements, it can be observed that such scores slightly increased in the second measurement, except in spiritually, in which these scores decreased.
Nicotine dependence also decreased. In the first measurement, they obtained 2.50 points in average and 1.10 in the second measurement. Women are perceived themselves less dependent on nicotine.

**DISCUSSION**

Regarding the Structured Intervention implemented, it is possible to point out that as an effect of the intervention, women in the treatment Group decreased the consumption of daily cigarettes in an average of 5 cigarettes, unlike the control group, in which the decrease was less than 1 cigarette. Similar results were obtained in another long-term study (23). Raich et al. (2015) (24) obtained very good results, though with a multi-component therapy Group in groups that measured smoking abstinence at one moth, six months and 12 months.

The intervention that was developed in workshops of eight group sessions was effective, probably because it was based on strengthening the capacities of women in their role of self-care of their own health, as well as motivation actions for the change, analyzed by other authors (25). Other researchers have carried out interventions in which people learn from themselves and find support mechanisms to perform a behavior change, realize that the behavior change is an important part of the identity as a person, confidence that one can be involved in healthy behavior through different provocative behaviors such as smoking, among others (26,27).

The brief minimum intervention in smoking provided by professionals in appointments or health controls has resulted in good impact (28). As the name says, the counseling is minimal or brief, but behavioral changes occur with more than one advice, because people require positive reinforcements in order to achieve certain behavior and if participating in a group there are better results due to social support (29).

In addition, it is necessary first, before the intervention to assess the attitudes, beliefs and perceptions of smokers as well as a history of tobacco use and other biosociodemographic characteristics that will guide professional action.

There was no effect of the intervention on the perception of the physical or mental health of women smokers. This may indicate that the evaluation in three months can be a period too short to observe changes in this sense. In contrast, in a study, the positive impact on the quality of life of people was observed when they stopped smoking (10).

This can show that interventions start to have impact in the perception of people after a period of more than three months, which was the feasible time to perform the post-test.

There is no doubt that smoking is one of the main issues to be considered in health education, hopefully at early age, with an adequate planning, providing simple messages (about its effects and addiction processes among others) without being alarmist or sensationalist. The issue is to provide information so that people can make their health decisions (30).

It is clear that tobacco is a licit drug and the smoking habit a chronic disease though with the potential to be reversed, with continuous professional action.
CONCLUSIONS

Structured intervention based on tools that provide health education and counseling with emphasis in the development of the self-efficacy of women smokers is effective in the decrease of the daily consumption of cigarettes.

For an intervention of this nature it is advisable that the groups are made up of 10-15 people that allow the participants to express themselves and to support themselves, producing with it a more pleasant and cozy environment. To carry out periodic reinforcements to achieve the cessation in order to avoid the relapses because the health benefits of the people smoking are gradually being given over time.

From the point of view of cost versus benefit, structured intervention is inexpensive with respect to the significant health benefits of women smokers.

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