11 - ALUMINIUM COOKING UTENSILS: LEVEL OF USER'S PERCEPTION REGARDING HEATH HAZARDS.

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INTRODUCTION

Nowadays, several tools and utensils, used for different activities, are made of materials containing heavy metals, which contribute to a high exposure to these hazardous substances. Due to the toxicity of heavy metals and their effects against different organs and systems, the abusive use of this substances have already been reported to cause major problems to human health (VASSALLO, D.V., 2011). For a long time, aluminum was considered as an element that do not pose risks to human health. However, since 1970s, some authors suggested that it could be related to the development of some diseases and encouraged studies concerning aluminum toxicity (LIUKKONEN-LILJA, H. 1992). Even though aluminum utensils are widespread in the market, the ingestion of this metal can be associated with several adverse effects for human health, such as anemia, osteomalacia, agitation and mental confusion. Besides, aluminum is related with neurodegenerative diseases, such as Alzheimer (HIGASHI, A. N., 2010). Taking into account that aluminum utensils are an unquestionable source of this metal, the use of such utensils increase the aluminum intake, therefore, its application for cooking purposes should be avoided (QUINTAES, K. D., 2000). Some studies found a relation between the aluminum release from cooking utensils and the amount of this metal ingested by individuals, suggesting that this intake could represent a biological hazards (Brazilian Association of Aluminum 2000).

MATERIAL AND METHODS

This study was carried out using a descriptive, epidemiological, cross-sectional and quantitative survey, under a qualitative approach. The assay was conducted with 100 subjects, all of whom agreed to participate by signing an Informed Consent Form, based on the government resolution Nº 196/96 (CNS-MS). The choice of the subjects, to participate in this study, was based on their frequent utilization of aluminum cooking utensils. Regarding the characteristics of the interviewed subjects, the group was composed by 25 males and 75 females, with ages ranging from 18 to 81 years. The interviews were carried out in three different cities of Sao Paulo state, (Atibaia, Caieiras and Sao Paulo - Vila Nova Conceiçao, Butanta and Morumbi neighborhoods). The information about the subjects' knowledge, regarding cooking utensils containing heavy metal, was obtained through a form composed by 27 questions in total, being X open-ended and X multiple choice questions, in which it was possible to choose more than one answer. The questions were used as the variants of the test, for comparison purposes. The obtained data were expressed in numbers and percentage, by using tables and simple frequency charts.

OBJECTIVE

Assess the knowledge of research subjects about the risks related to the regular use of aluminum cooking utensils and a possible relation between this use and the appearance of intoxication symptoms and Alzheimer disease.

RESULTS

The results regarding all the information obtained in the survey conducted with 100 subjects are presented in Figures 1, 2, 3 and 4.

In Figure 1, it can be observed that the majority of the subjects were between 21 and 30 years old, with complete secondary school. The average number of residents in the household was 4, but the results regarding the contact, of all residents, with aluminum cooking utensils were conflitant. Considering that all residents were in contact with the aluminum utensils, the data comprised information from 351 subjects.

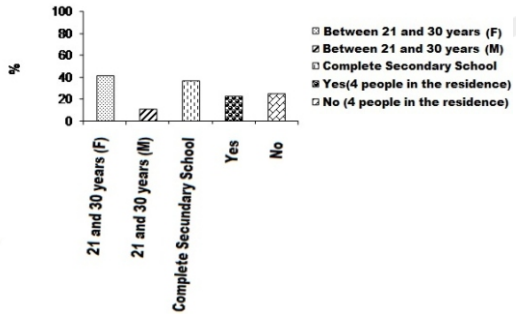

Figure 1. Frequency of responses related to the characteristics of age and educational level of the subjects and other residents of their households and investigation of the existence of contact with aluminum utensils by these subjects.

Figure 2 shows that 33% of the subjects pointed Teflon as the best material to fabricate pots. Concerning other utensils, 35% of the subjects preferred to use wooden spoon, describing the wood as the best material to fabricate this utensil. However this is a mistake, since wood is a porous material and, if not properly sanitized, may favor the microbial growth. The majority of the subjects indicate the economic factors as the main criteria which led them to choose aluminum utensils and 51% of the subjects have shallow knowledge about the risks related with exposure to aluminum.

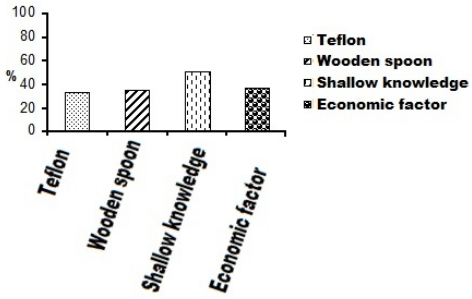

Figure 2. Frequency of responses related to opinion of the subjects in which regards the following issues: best material to be applied in the manufacture of cooking utensils; level of subjects instruction concerning the risks related with the use of cooking utensils that may release heavy metals in the food and the important criteria which influence people's purchase choices for cooking utensils.

According to the subjects, teflon is the best material to manufacture pots; however, the durability of teflon pots is much lower (2 years) than the durability of aluminum ones (10 to 20 years). Regarding the type of aluminum utensils used by the subjects, it was observed that 39% reported the use of frying pans, pressure cookers and other ordinary pots. Besides, 44% of the subjects were used to store the food in aluminum pots for 12 h (Figure 3), which may lead to a higher risk of intoxication.

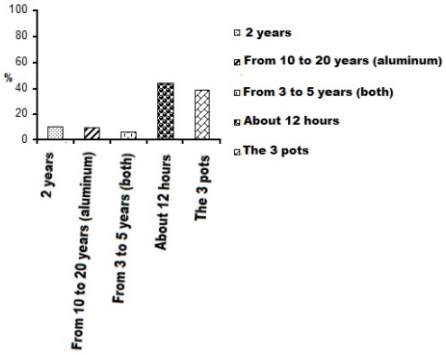

Figure 3. Frequency of responses related to the utilization of different types of pans, the durability of the pots made of Teflon and aluminum, and for how long the subjects store food in aluminum pots.

In Figure 4, it can be seen that for 40% of the subjects, the foods prepared in pots made of materials, other than aluminum, have a better taste. Concerning the contact of the subjects with other aluminum containers (apart from the pots), which might also be a source of this heavy metal, it was observed that 11% reported consumption, at least one a week, of beer and soft drinks in aluminum cans, rising their contact with this metal.

Regarding Alzheimer disease, for 90% of the subjects there was no history of relatives presenting the disease and the majority of them did not report any symptom related with Alzheimer. However, 0.7% reported a loss in the cognitive abilities and 32 mentioned the occurrence of memory loss. Besides, a minority of the subjects presented two or more Alzheimer-related symptoms simultaneously (2% presented five symptoms, 9% presented four symptoms and 18% presented three symptoms), which might be an indicative of Alzheimer development in the future.

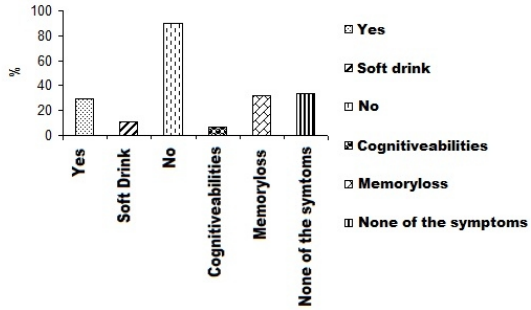

Figure 4. Frequency of responses related to influence of the pots material in the taste of the food; frequency of consumption of foods packaged in aluminum containers; Alzheimer disease background in the family and presence of Alzheimer-related symptoms (loss of cognitive abilities, memory loss, etc.).

CONCLUSION

The results obtained in this study suggest a lack of knowledge from the subjects when it concerns the biological risks related to the utilization of aluminum cooking utensils. Although a small group of subjects reported some symptoms of intoxication and/or Alzheimer disease, best results would be achieved with further studies in which clinical tests, specific for intoxication,

should be included. This survey presents only hypothesis of a relation between heavy metal intoxications, Alzheimer disease and utilization of aluminum cooking utensils. Besides, it provides information about the risks involved in the utilization of heavy-metal-containing cooking utensils; since, even if these utensils present no relation to Alzheimer development, they certainly present a risk to human health.

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ALUMINIUM COOKING UTENSILS: LEVEL OF USER'S PERCEPTION REGARDING HEATH HAZARDS.

ABSTRACT

During the cooking process some compounds, from the cooking utensil, may be released in the food. Thus, the utilization of pots containing heavy metals, such as aluminum, can represent a risk for human health, since this metal can affect several neurophysiological processes, including the ones responsible for Alzheimer disease. Objective: Assess research subject's knowledge about the risks related to regular use of aluminum cooking utensils and a possible relation between this use and Alzheimer disease. Methods: This study was carried out using a descriptive, cross-sectional survey conducted with 100 subjects. The subjects were asked to fill in a form composed by objective questions, which were used as variants of the test. The data were expressed in tables and simple frequency charts. The ethical aspects were in agreement with the resolution Nº 196/96 (CNS-MS). Results: The results showed that 35% of the subjects regularly use a wooden spoon to stir the food in aluminum pots; 44% store the food in aluminum pots for about 12 h and 51% are not aware of the risks presented by the use of aluminum cooking utensils. The majority of the subjects have average income and basic educational level, what might lead to shallow knowledge concerning the risks related with heavy metals. Besides, nowadays the economic factors seem to have a great influence in people's purchase choices for cooking utensils. None of the interviewed subjects suffered from Alzheimer disease. However, a minority of them (10%) had a history of relatives presenting the disease. A small group of subjects (2%) presented two main symptoms related with Alzheimer disease: memory loss and loss of cognitive abilities. These results suggest that the use of aluminum cooking utensils may not be related with Alzheimer disease development, since the great majority of subjects assessed did not present symptoms of this disease.

KEY-WORDS: Aluminum, cooking utensils, Alzheimer.

USTENSILES CULINAIRES EN ALUMINIUM: DEGRÉ DE PERCEPTION DES UTILISATEURS CONCERNANT LES RISQUES POUR LA SANTÉ.

RÉSUMÉ

L'utilisation d'ustensiles de cuisine à base de matériaux contenant des métaux lourds peut poser un risque pour la santé, car l'aluminium affecte divers processus neurophysiologiques, y compris ceux qui sont responsables de la maladie d' Alzheimer. Objectif: évaluer les connaissances des sujets de la recherche sur les dangers de l'utilisation quotidienne des ustensiles de cuisine en aluminium et une relation possible entre cette utilisation et la maladie d'Alzheimer. Méthodes: Il s'agissait d'une étude descriptive, transversale, quantitative, dans lequel 100 personnes ont accepté de participer, en réponse à un formulaire contenant des questions objectives qui ont été utilisés comme variables à des fins de comparaison. Les données ont été exprimées sous forme de tableaux de fréquence et de graphiques simples. Les aspects éthiques ont été respectées , conformément à la Résolution n ° 196 /96 (CNS -MS). Résultats: On a constaté que 35% des sujets en utilisant une cuillère en bois pour remuer les aliments dans des pans d'aluminium; 44% stocker les aliments dans des casseroles en aluminium pour environ 12 hs et 51 % n'ont pas de connaissances sur les risques liés a l´utilization des ustensiles de cuisine en aluminium. La plupart des répondants ont un revenu moyen et le niveau d'éducation de base, ces facteurs peuvent conduire à une connaissance superficielle sur les risques liés aux métaux lourds. En outre, de nos jours les facteurs économiques semblent avoir une influence majeure sur les choix d'achat des gens pour les ustensiles de cuisine. Aucun des répondants ont la maladie d'Alzheimer,mais une minorité (10%) ont une relation avec les patients attaints de ces maladie. Une petite proportion de répondants (2%) avait deux principaux symptômes liés à la perte de mémoire et la perte des capacités cognitives d'Alzheimer. Les résultats observés n'indiquent pas une relation constante entre l'utilisation d'appareils de cuisson et le développement de la maladie d' Alzheimer, puisque la majorité des sujets ne présentait aucun symptôme de la maladie.

MOTS-CLÉS: aluminium ,ustensiles culinaires, Alzheimer.

UTENSILIOS CULINARIOS DE ALUMINIO: GRADO DE PERCEPCIÓN DE USUARIOS SOBRE LOS PELIGROS PARA LA SALUD.

RESUMEN

El uso de utensilios de cocina hechos de materiales que contienen metales pesados puede suponer un riesgo para la salud, ya que el aluminio afecta a diversos procesos neurofisiológicos, incluyendo los responsables de la enfermedad de Alzheimer. Objetivo: evaluar el conocimiento de los temas sobre los peligros del uso diario de utensilios de aluminio y la posible relación de esta utilisación con la enfermedad de Alzheimer. Métodos: Se realizó un estudio descriptivo, transversal, cuantitativo, en el que 100 personas aceptaron participar, respondiendo a un formulario con preguntas objetivas que se utilizaron como variables para efectos de comparación. Los datos se expresaron como tablas de frecuencia y gráficos simples. Se respetaron los aspectos éticos, de conformidad con la Resolución N ° 196 /96 (CNS -MS). Resultados: Se observó que el 35 % de los sujetos se utilisan de una cuchara de madera para revolver la comida en olla de aluminio, 44% de almacenan los alimentos en recipientes de aluminio durante aproximadamente 12 horas y el 51 % no tienen conocimiento acerca de los riesgos relacionados con la el uso de utensilios de aluminio. La mayoría de los encuestados tienen ingresos medios y el nivel de educación básica, estos factores pueden llevar a un conocimiento superficial acerca de los riesgos asociados a los metales pesados. Por otra parte, en la actualidad los factores económicos parecen tener una influencia importante en las decisiones de compra de la gente para los utensilios de cocina. Ninguno de los encuestados tiene la enfermedad de Alzheimer, pero una minoría (10 %) tienen una relación con los pacientes con esta enfermedad. Una pequeña proporción de los encuestados (2 %) tenía dos síntomas principales relacionados con Alzheimer, como pérdida de memoria y la pérdida de las capacidades cognitivas. Los resultados observados no indican una relación consistente entre el uso de aparatos de cocción y el desarrollo de la enfermedad de Alzheimer, ya que la mayoría de los sujetos no mostraron síntomas de la enfermedad.

PALABRAS CLAVES: aluminio,utensilios de cocina, Alzheimer.

UTENSÍLIOS CULINÁRIOS DE ALUMÍNIO: GRAU DE PERCEPÇÃO DOS USUÁRIOS QUANTO AOS RISCOS À SAÚDE.

RESUMO

A utilização de utensílios culinários feitos de materiais que contenham metais pesados pode representar risco à saúde, uma vez que, o alumínio afeta vários processos neurofisiológicos, incluindo os responsáveis pela Doença de Alzheimer. Objetivo: Verificar o conhecimento dos sujeitos da pesquisa sobre os riscos do uso diário de utensílios culinários feitos de alumínio e a possível relação desta utilização com a Doença de Alzheimer. Métodos: Trata-se de um estudo descritivo, transversal, quantitativo, do qual 100 pessoas concordaram em participar, respondendo a um formulário contendo questões objetivas que foram utilizadas como variáveis para fins de comparação. Os dados foram expressos em tabelas e gráficos de frequência simples. Os aspectos éticos foram respeitados, de acordo com a Resolução Nº 196/96 (CNS-MS). Resultados: Observou-se que, 35% dos sujeitos da pesquisa utilizam colher de pau para mexer os alimentos na panela de alumínio; 44% armazenam os alimentos em panelas de alumínio por cerca de 12 h e 51% não têm conhecimento sobre os riscos ligados à utilização de utensílios culinários de alumínio. A maioria dos entrevistados têm renda média e nível de escolaridade básico, esses fatores podem levar a um conhecimento superficial a respeito dos riscos relacionados com metais pesados. Além disso, hoje em dia os fatores econômicos parecem ter uma grande influência nas escolhas de compra das pessoas para utensílios de cozinha. Nenhum dos entrevistados possui a doença de Alzheimer, todavia, uma minoria (10%) possui parentesco com portadores da doença. Uma pequena parte dos entrevistados (2%) apresentaram dois principais sintomas relacionados ao Alzheimer: perda de memória e perda de habilidades cognitivas. Os resultados observados não indicam uma relação consistente entre a utilização de utensílios culinários e o desenvolvimento da doença de Alzheimer, uma vez que a grande maioria dos indivíduos avaliados não apresentava nenhum sintoma da doença.

PALAVRAS-CHAVES: Alumínio, utensílios culinários, Alzheimer.