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ACCESS AND TIME AS THE MAIN DETERMINANTS OF HEALTHY LIFESTYLE CHOICES, IN A SAMPLE OF PORTUGUESE ADULTS

Acesso e tempo são os principais determinantes de escolhas de estilo de vida saudável, numa amostra de adultos Portugueses

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ABSTRACT

Mediterranean diet (MD), regular physical activity (PA), non-smoking, and adequate rest are healthy lifestyle habits that reduce risk of non-communicable diseases. Despite health campaigns and policies enforced by the Portuguese Government, tobacco smoking and overweight, derived from a combination of sedentarism and non-healthy food patterns, have been steadily increasing in the Portuguese adult population. The present study aimed to assess the predisposition to change habits leading to a healthier lifestyle in a convenience sample of 206 Portuguese adults and identify external factors that could help to overcome psychological barriers and prompt these changes. Most of the participants were predisposed to improve their own and the community well-being through the implementation of healthier lifestyle habits (83.0%). A high percentage of participants reported they would like to improve MD food habits (81.6%), followed by regular PA (65.0 %), sleep 7 to 8 hours per night (47 %), and quit smoking (22.3%). Compared to women, a higher proportion of men reported they should increase fruit consumption (62.5% men, 42.1% women, p=0.02), and whole cereals (30% men, 13.5% women, p=0.017), as well as to reduce red meat (42.5% men, 23.8% women, p=0.02), and reduce butter and increase olive oil consumption (32.5% men, 15.9% women, p=0.022). More access to healthier foods and local producers was reported by most participants (48.5%) as the main external factor that would facilitate the adoption of healthier food choices. More time was the main factor reported to adopt regular PA (62,6%).

Keywords: Physical activity, Mediterranean diet, Behavior change.

RESUMO

A Dieta mediterrânea (DM), a atividade física regular (AF), não fumar e repouso adequado são hábitos de vida saudáveis que reduzem o risco de doenças não transmissíveis. Apesar das campanhas e políticas de saúde implementadas pelo governo português, o tabagismo e o excesso de peso, derivados de uma combinação de sedentarismo e padrões alimentares não saudáveis, têm vindo a aumentar na população adulta portuguesa. O presente estudo teve como objetivo avaliar a predisposição para mudanças de hábitos conducentes a um estilo de vida mais saudável numa amostra de conveniência de 206 adultos portugueses e identificar fatores externos que possam ajudar a ultrapassar barreiras psicológicas e estimular essas mudanças. A maioria dos participantes estava predisposta a melhorar o seu bem-estar e o da comunidade através da implementação de hábitos de vida mais saudáveis (83,0%). Uma alta percentagem de participantes relatou que gostaria de melhorar os hábitos alimentares de DM (81,6%), seguido de AF regular (65,0%), dormir 7 a 8 horas por noite (47,0%) e parar de fumar (22,3%). Em comparação com as mulheres, uma proporção maior de homens relatou que deveria aumentar o consumo de frutas (62,5% homens, 42,1% mulheres, p=0,02) e cereais integrais (30% homens, 13,5% mulheres, p=0,017), bem como reduzir a carne vermelha (42,5% homens, 23,8% mulheres, p=0,02), reduzir a manteiga e aumentar o consumo de azeite (32,5% homens, 15,9% mulheres, p=0,022). O maior acesso a alimentos mais saudáveis e de produtores locais foi relatado pela maioria dos participantes (48,5%) como o principal fator externo que facilitaria a adoção de escolhas alimentares mais saudáveis. Mais tempo foi o principal fator relatado para adotar AF regular (62,6%).

Palavras-chave: Atividade física, Dieta mediterrânica, Alteração de comportamentos.

1 INTRODUCTION

Decades of scientific research have been accumulating evidence on the importance of adopting healthy lifestyle behaviors to prevent non-communicable diseases, particularly, healthy dietary patterns such as Mediterranean Dietary Pattern (MD), regular physical activity (PA), and non-smoking habits. Changes in any of these lifestyle factors are associated with reduced mortality risk, and this reduction is even more substantial when these healthy lifestyle factors are combined (Prinelli et al., 2015; Viera & Reamy, 2022). Countries throughout the Europe have been implementing policies to promote healthy eating, increase physical activity and cease tobacco use. Despite all health campaigns and enforced policies by the Portuguese Government, tobacco smoking and overweight, derived from a combination of sedentarism and non-healthy food patterns, have been steadily increasing in the Portuguese adult population. Over the last 10 years: 26.1% cigarette smokers in 2007 to 27.1% in 2018; 54.5% of overweight in 2006 to 62.3% in 2016 (GHO, 2021). Moreover, the percentage of sedentarism is high (~43%) and only 27% of Portuguese with more than 14 years old meet the recommendations of an active lifestyle (DGS, 2017). Likewise, most of the studies assessing MD in Portuguese adults, including studies from our group, have reported moderate levels of adherence in more than 50% of the studied population, and low percentages reaching high adherence levels (17 to 26%) (Andrade et al., 2020).

All these lifestyle factors impact on well-being, which has been targeted by the WHO Regional Office for Europe as one of the priorities for the European population in the health 2020 monitoring framework. Higher subjective well-being levels are associated with higher likelihood of being non-smokers, of doing physical exercise, and of eating more healthy foods, with the mechanism behind these associations being better described in terms of a simultaneous relationship between subjective well-being level and type of lifestyle (IOM, 2017; Macagnan et al., 2019). Another factor that impacts on well-being is sleep quantity and quality. Adequate night sleep is considered as part of the Mediterranean lifestyle, and quality of sleep has been associated with optimal well-being (Prendergast et al., 2016). Main factors that have been reported as barriers or drivers of healthy

lifestyle were lack of time (Cavallini et al., 2020), and having a supportive environment (Brandt et al., 2018), respectively.

Considering all the above evidence, the objectives of this work were to assess in a convenience sample of Portuguese adults the predisposition to change habits leading to a healthier lifestyle and identify external factors that could help to overcome psychological barriers and prompt these changes.

2 METHODS

2.1 Study design and ethics

The present study is an observational study based on a self-filled online questionnaire. A structured online survey was designed to collect anonymous data on predisposition to change lifestyle habits that would improve health and well-being, and on external factors that would facilitate change. The questionnaire was confidential and filled anonymously, with an introductory explanation of the study and the nature of the participation. Before filling the questionnaire, all subjects gave their informed consent to the use of the anonymous data for statistical analysis and scientific publication. The study complied with European Regulation on Data Protection (EU, 2016). The questionnaire was structured in 18 questions, 8 of multiple-choice response (MR) and 10 of single-choice response (SR), that included questions on: i) demographic data (SR): gender, age, type of residence (city, town or rural), and region of Portugal; ii) predisposition to change and external facilitators: general predisposition to change lifestyle habits (SR), which lifestyle habits would like to change (desirable changes) (MR), and which external factors would facilitate implementation of healthier food and physical activity habits, and reduce tobacco consumption (MR); iii) Mediterranean diet (MD): knowledge of MD (SR), changes in food habits leading to a higher adhesion to MD (MR), criteria for food selection (price, quality, labels) (SR); iv) work conditions that would improve well-being (MR).

2.2 Data collection and analysis

The questionnaire was constructed on Google Forms to collect data anonymously and disseminated through institutional mailing lists, social media and personal contacts of the researchers involved in the study. Collection of anonymous data occurred from April to June 2020. A total of 206 participants completed the questionnaire and the 206 responses were eligible for analysis (Portuguese adults with age ≥ 18 years, living in Portugal). Results on the questions selected by the participants regarding lifestyle behaviours and influencing factors were analysed in the scope of this article, are presented in tables (questions included in i), ii) and iii). Statistical analysis was performed with the Statistical Package for the Social Sciences (SPSS) 26 statistical package for Windows (SPSS, Inc., Chicago, IL, USA). Nominal variables are expressed as % of the respondents selecting each option. Continuous variables are presented as median, interquartile range (IQR), mean and standard deviation (SD). Non-parametric Kruskal-Wallis tests for the number of desired changes per participant or Chi square tests for all the other nominal variables, were used to assess differences between gender, age class and type of residence. All comparisons were considered significant for p-values < 0.05 (Marôco, 2018).

3 RESULTS

From the 206 individuals with Portuguese nationality that responded the questionnaire, most of them were women (73.2%), non-smokers (74.8%), and had a mean age of 32.0 (10.7 SD) years old, being the majority under 36 years (71.3%). Most respondents lived in the Centre region of Portugal (87.9%), in urban centers (94.2%), and only 5.8% lived in rural areas.

Regarding the predisposition to improve well-being by changing lifestyle habits, most of the participants would be willing to improve their own and the community well-being through the implementation of healthier lifestyle habits (83.0%). Only 1% reported not be willing to change lifestyle habits, and 16% of the participants answered they never thought about adopting healthier

lifestyle habits to improve well-being (Table 1). No significant differences were observed between genders.

With respect to which lifestyle habits the participants would like to change to improve their well-being, a high percentage of participants reported they would like to improve MD food habits (81.6%), followed by improve practice of PA (65.0 %), sleep 7 to 8 hours per night (47,0%), and quit smoking (22.3%) (Table 1). No significant differences ($p>0.05$) were observed among genders in any of these lifestyle habits, however the results show that women tended to select the option "improve of MD" more than men (88.2% women, 76.5% men, $p=0.051$, Table 1).

Interestingly, regarding MD, significant differences were observed between participants "predisposed to change" (those who in the first question answered they were willing to improve well-being by changing lifestyle habits), and participants "non-predisposed to change" (those who reported in the first question not to be willing to change, or that never thought about the subject). In fact, a lower percentage of "non-predisposed to change" participants selected "improve MD" as the main lifestyle habit to change, compared to "predisposed to change" participants (65.7% non-predisposed versus 81.6% predisposed, $p=0.008$).

With the focus of increasing knowledge on MD food choices, two questions specific to MD pattern were included in the questionnaire: a general question about familiarity with the concept of MD, and a MR question on the specific food habits related to MD, which included 9 possible options (Table 1). Overall, only 63.1% of the participants reported to know the concept of MD, with no significant differences observed among genders. When asked about specific MD food habits, more than half of the participants reported the need to increase daily water consumption (61%), reduce sugar (55%), and increase consumption of vegetables and legumes (51%) (Table 1). The next most selected options were increase fruit consumption (47%) and reduce sweetened beverages (43%) (Table 1). Interestingly, compared to women, a higher proportion of men reported they should increase fruit consumption (62.5% men, 42.1% women, $p=0.02$), and whole cereals (30% men, 13.5% women, $p=0.017$), as well as to reduce red meat (42.5% men, 23.8 women, $p=0.02$), and reduce butter and increase olive oil consumption (32.5% men, 15.9% women, $p=0.022$) (Table 1).

Table 1

Participants' predisposition for healthy lifestyle behaviors, and comparison between genders

Question	Total	Women	Men	p-value
Would you be willing to improve your own and your community well-being through implementation of healthier lifestyle habits? (%/N)				
Yes	83.0/171	79.3/119	92.7/51	0.073
No	1.0/2	1.3/2	0.0/0	
Never thought about it	16.0/33	19.3/29	7.3/4	
Personally, what would you like to change to improve your health and well-being? (%/N)				
Improve MD	81.6/168	84.7/127	72.7/40	0.051
Practice PA	65.0/134	64.7/97	67.3/37	0.728
Sleep 7 – 8 hours/night	47.1/97	44.7/67	52.7/29	0.305
Quit smoking	22.3/46	22.7/34	21.8/12	0.897
Which food habits of the Mediterranean diet would you improve? (%/N)				
Increase daily water consumption	61.1/102	62.7/79	55.0/22	0.385
Reduce sugar consumption	55.1/92	54.8/69	57.5/23	0.761
Increase vegetables and legumes consumption	50.9/85	49.2/62	55.0/22	0.523
Increase fresh and dried fruits consumption	47.3/79	42.1/53	62.5/25	**0.024**
Reduce sweetened beverages consumption	43.1/72	42.9/54	45.0/18	0.812
Reduce red meat consumption	28.7/48	23.8/30	42.5/17	**0.022**
Reduce salt and increase aromatic herbs	25.7/43	22.2/28	35.0/14	0.105
Reduce butter and increase olive oil	19.8/33	15.9/20	32.5/13	**0.022**

Increase consumption of whole cereals	17.4/29	13.5/17	30.0/12	**0.017**

Notes: % refers to the percentage of participants that selected the choice; N refers to the number of selected choices; 206 participants answered the first and second questions; 167 participants answered the third question. Significant differences ($p<0.05$) are flagged in bold.

Regarding the factors that would facilitate the adoption of lifestyle habits leading to a better well-being, 5 options were available for multiple selection: having more time in the daily routine, help from family and friends, more information on the subject, more support from health professionals, and having support from a life coach (Table 2). Most participants selected "more time" (68%) as the main factor that would facilitate the adoption of healthier lifestyle habits globally (Table 2). No significant differences ($p>0.05$) were observed among genders in any of the options. "More time" was also the option selected by most participants regarding factors that would facilitate regular PA physical activity (62.6%) (Table 2). When questioned about factors that would facilitate healthier food choices, the most selected option was having more access to healthier foods and local producers (48.5%), with a higher percentage of men selecting this option than women (60% men versus 44% women, $p=0.042$) (Table 2).

Table 2

Factors facilitating behaviour change towards healthier lifestyle habits, and comparison between genders.

Question	**Total**	**Women**	**Men**	**p-value**
General: what would help you to implement habits that leads to a better well-being? (%/N)				
More time in daily routine	68.0/140	67.3/101	69.1/38	0.811
Help from friends and family	17.5/36	16.0/24	20/11	0.500
More information	16.2/54	26.0/39	25.5/14	0.937
More support from health professionals	25.2/52	24.0/36	27.3/15	0.631
Life coach support	15.5/32	17.3/26	10.9/6	0.261
Healthy food choices: what would help you to change your food habits? (%/N)				
More access to healthier foods & produced locally	48.5/100	44.0/66	60.0/33	**0.042**
Access to trustworthy information on healthy foods	21.4/44	19.3/29	25.5/14	0.340
Increase knowledge & comprehension of food labels	37.4/77	40.0/60	30.9/17	0.234
Improved influence from food area professionals	17.0/35	20.0/30	7.3/4	**0.030**
Support of nutritionists	33.5/69	33.3/50	32.7/18	0.935
Increase innovation on the promotion of healthy diets	14.6/30	17.3/26	7.3/4	0.071
Physical Activity: you would include physical activity in your routine if you had (%/N)				
More time	62.6/129	60.7/91	69.1/38	0.269
Promotion of sport activities near residence	16.0/33	15.3/23	18.2/10	0.623
Access to no-cost sport activities	33.0/68	33.5/50	30.9/17	0.743
Places directed to the practice of PA near residence	29.6/61	32.0/48	21.8/12	0.156
Supervision from health professionals	16.5/34	16.7/25	14.5/8	0.714

Notes: % refers to the percentage of participants that selected the choice; 206 participants answered the questions general, healthy food choices and physical activity (150 women, 55 men). Significant differences ($p<0.05$) are flagged in bold.

4 DISCUSSION

Several observational and intervention studies have been demonstrating the association of MD and other modifiable lifestyle factors, such as physical activity, with decreased mortality and reduced risk of non-communicable diseases (Van der Brandt, 2011; Viera & Reamy, 2022). Additionally, due to the Covid pandemic, evidence has been emerging on the beneficial effects of healthy lifestyle habits in the immune system, and reduced risk of infectious diseases (Morales et al., 2021). However, the utility of large-scale lifestyle-based health promotion campaigns and programs is directly influenced by citizens' adherence to the recommended behavior changes. Unfortunately, poor adherence is widespread, representing a significant challenge to the effectiveness of these interventions (Midleton et al., 2013; German et al., 2022). The present study proposed to evaluate the predisposition to change habits leading to a healthier lifestyle and identify external factors that could help to overcome psychological barriers and prompt these changes in a sample of Portuguese adults.

Our results revealed that a large proportion (83%) of the participants were aware of the necessity to adopt healthier lifestyle habits to improve well-being, mainly increasing adherence to MD (81.6%) and practice PA (65%). This awareness of the importance of MD and PA is in line with recent evidence showing that MD appears to have the most beneficial effect on cardiovascular events and increased hours of physical training are strongly related to greater improvement of cardiovascular disease risk factors (Abbate et al., 2020). Moreover, health-promoting behaviors and psychosocial well-being of individuals are important determinants of health status (Lee & Loke, 2005; Stepanyan & Asriyan, 2022). Previous work from our group established an association between subjective well-being and healthier habits such as the adherence to the MD in sample of Portuguese adults (Andrade et al., 2020).

The awareness exhibited by the participants of this study, concerning the importance of a healthy diet and PA regular practice to improve well-being, must overcome some barriers to be translated into action. Globally, the main barrier reported was lack of time, which was mainly associated with lack of time for PA. These results are similar to other studies. For example, lack of time for exercise was the most frequently reported barrier in Denmark, particularly in younger respondents, (Nielsen et al. 2017), as well as in USA (Cavallini et al., 2020). Other barriers were not being used to do exercise and the cost of participating in organized exercise activities (Nielsen et al. 2017). In the present study, ~30% participants referred that they would include PA in their routine if they had access to no cost sport activities and places directed to PA practice near residence, suggesting that time and economic barriers are the ones with most relevance to PA regular practice.

Food environments, including food availability and access, influence food choices across many dimensions. Observational studies generally show a positive association between increased availability of healthy foods and improved diet quality (Vadiveloo et al., 2021). In the present study, nearly 50% of the participants reported that more access to healthier foods, and foods produced locally, would facilitate adoption of healthier food choices. The next appointed factor was increased knowledge and comprehension of food labels, and support from a health professional (nutritionist). Other studies have shown that nutritional information can lead to healthier food choices (Enriquez & Archila-Godinez, 2022). Thus, simplification of nutritional information in food labels may be a way of mitigating barriers and increase the likelihood that nutritional value can be significant in healthy food choices.

5 CONCLUSION

The present study revealed that a large proportion of the participants were aware of the necessity to adopt healthier lifestyle habits to improve well-being, mainly increasing adherence to MD and practice regular PA. The main limitation of this study is the fact that the sample is not representative of Portuguese population. Nevertheless, some important points have emerged from this study. Lack of time was the main reported barrier to adopt habits of regular PA. Access to no cost sport activities and places directed to PA practice near residence was reported as one important driving force. Thus, work-life balance and offer of sport activities near residence or work should be in the agenda of

employers and politicians as a way of promoting healthy lifestyles and well-being of the population. Regarding food choices, more access to healthier foods, and foods produced locally, was reported by most participants as the main factor that would facilitate adoption of healthier food choices. This emphasizes the importance of short-chain food circuits to increase availability of local vegetables, fruits and other foods characteristic of MD, such as non-refined cereals, olive oil and nuts.

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