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PERIODONTITIS ASSOCIATION WITH METABOLIC SYNDROME CONSIDERING ANTHROPOMETRIC AND MEDICATION INFORMATION

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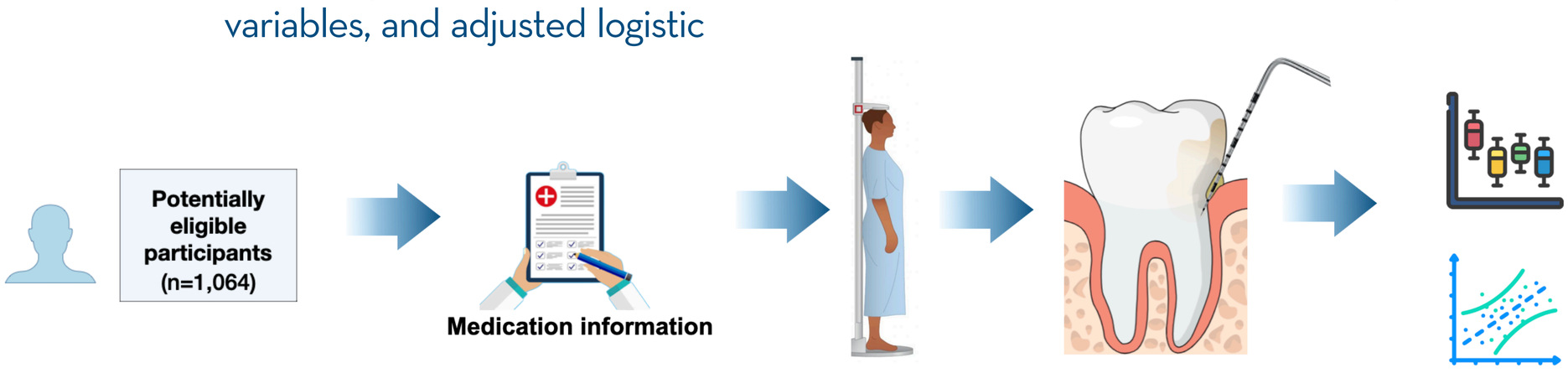
OBJECTIVES

We aimed to explore the bidirectional relation between metabolic syndrome (MetS) and periodontitis (PD) in an adult Portuguese population.

METHODS

A cross-sectional representative study was conducted, geographically stratified, targeting individuals aged 18 years and older (adults and elderly) residing in the municipalities of Almada and Seixal, Portugal. This study was approved by the Research Ethics Committee of the Regional Health Administration of Lisbon and Tagus Valley, IP (Portugal) (Approval numbers: 3525/CES/2018 and 8696/CES/2018) and in accordance with the Declaration of Helsinki, as revised in 2013.The diagnosis of MetS was based on the International Diabetes Federation (IDF) consensus using anthropometric measurements and medication information [1]. The diagnosis of PD was based on a circumferential examination with a manual periodontal North Carolina probe, excluding third molars, implants and retained roots. Staging was done based on the World Workshop case definition [2]. We measured Periodontal Pocket Depth, Recession and Clinical Attachment Loss. With these measurements, we calculated Periodontal Inflamed Surface Area (PISA) and Periodontal Epithelial Surface Area (PESA) [3]. We performed a Student's t-test for continuous measures, chi-square test for categorical variables, and adjusted logistic



Metabolic syndrome diagnosed with anthropometric and medication information does not show a bidirectional relationship with periodontitis in this population

RESULTS

Overall, out of the 1,064 participants, 637 were diagnosed with PD (132 with MetS) and 427 without (71 with MetS). Among the 1,064 participants, individuals with periodontal disease (PD) were significantly older (65.1 vs. 54.6 years, p < 0.001), more likely to be male (p < 0.001), and more often active smokers (15.5% vs. 10.8%, p = 0.033) compared to those without PD. Participants with metabolic syndrome (MetS) were also significantly older (66.1 vs. 59.6 years, p < 0.001) and had a lower prevalence of active smoking (7.4% vs. 15.1%, p = 0.006). Severe periodontitis (Stage III–IV) was more common among individuals with MetS (29.6% vs. 16.6%, p = 0.047). Both PISA and PESA scores were significantly higher among those with PD (both p < 0.001), while no significant differences were observed in these scores between participants with and without MetS. Logistic regression analyses, adjusted for age, sex, and smoking status, revealed no statistically significant associations between metabolic syndrome (MetS) and periodontal disease (PD) in either direction. MetS was not significantly associated with PD (OR = 1.09; 95% CI: 0.78–1.53; p = 0.6190) or severe PD (Stage III–IV) (OR = 1.26; 95% CI: 0.88–1.79; p = 0.2027). Conversely, neither PD (OR = 1.06; 95% CI: 0.76–1.49; p = 0.7259) nor severe PD (OR = 1.30; 95% CI: 0.92–1.85; p = 0.1388) was significantly associated with the presence of MetS.

Table 1. Characteristics of participants according to their periodontal (PD) status and metabolic syndrome (MetS) diagnosis (N=1,064).

	Total (N=1,064)	PD (n= 637)	No PD (n= 427)	p-value	MetS (n= 203)	No MetS (n= 861)	p-value
Age, mean (SD)	60.9 (16.3)	65.1 (13.6)	54.6 (17.9)	**<0.001**	66.1 (9.9)	59.6 (17.2)	**<0.001**
Female	58.0 (617)	51.8 (330)	67.2 (287)	**<0.001**	60.1 (122)	57.5 (495)	0.550
Male	42.0 (447)	48.2 (307)	32.8 (140)		39.9 (81)	42.5 (366)	
Active smoker, % (n)	13.6 (145)	15.5 (99)	10.8 (46)	**0.033**	7.4 (15)	15.1 (130)	**0.006**
MetS, % (n)	203 (19.1)	20.7 (132)	16.6 (71)	0.113	-	-	-
PD, % (n)	59.9 (637)	-	-	-	65.0 (132)	58.7 (505)	0.113
Stage III-IV, % (n)	24.0 (255)	-	-	-	29.6 (60)	16.6 (143)	**0.047**
PISA, mean (SD)	150.0 (320.9)	225.3 (393.2)	37.8 (70.5)	**<0.001**	150.6 (310.5)	147.5 (323.4)	0.899
PESA, mean (SD)	908.4 (507.9)	1066.2 (582.9)	673.1 (209.3)	**<0.001**	912.6 (526.4)	890.6 (503.1)	0.589

Table 2. Logistic regression of risk of MetS towards PD and severe PD, and the risk of PD and severe PD towards MetS (adjusted for age, sex and smoking status).

	OR (95% CI)	p-value
MetS (exposure)		
PD (outcome)	1.09 (0.78, 1.53)	0.6190
Stage III-IV PD (outcome)	1.26 (0.88, 1.79)	0.2027
PD (exposure)		
MetS (outcome)	1.06 (0.76, 1.49)	0.7259
Stage III-IV PD (exposure)		
MetS (outcome)	1.30 (0.92, 1.85)	0.1388

CONCLUSIONS

MetS diagnosed with anthropometric and medication information does not show a bidirectional relationship with PD in this population. Future studies should confirm if these findings persist using clinical markers of MetS.

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