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SHORT COMMUNICATION

Self-reported food and drug allergy in Maputo, Mozambique

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There is wide regional variation in the prevalence of drug[1] and food[2,3] allergy. Although no data are available from developing countries, allergy frequency is expected to differ from that observed in more affluent regions, reflecting the genetic background, and the cultural and economic influences on exposure to allergens.

This is the first report on prevalence estimates for food and drug allergy in an African country.

Students ($n=447$; one-third of all those registered; 44.7% male; age range: 18–56 years; median age: 25 years) and non-teaching staff ($n=62$; 43.5% male; age range: 23–60 years; median age: 32 years) at a private university in Maputo volunteered to participate in a cross-sectional health survey with the main focus on the evaluation of risk factors for cardiovascular diseases, namely smoking, drinking, obesity and blood pressure. The questions 'Are you allergic to any food/drug?' and 'If yes, which food(s)/drug(s) are you allergic to?' were added to the questionnaire to ascertain allergy.

Most participants (96.8%) were born in Mozambique, and were asked specifically about their place of birth. This was subsequently grouped into Maputo (Maputo city and Maputo province), South (provinces of Gaza and Inhambane), Centre (provinces of Manica, Sofala, Tete and Zambezia) and North (provinces of Nampula, Niassa and Cabo Delgado). Ethnicity was determined by self-identification, and participants were classified as either black or non-black for data analysis.

Odds ratios with 95% confidence intervals were computed to quantify the association between food/drug allergy and sociodemographic factors.

The life prevalence of self-reported food allergy was 19.1%, and seafood (54.8%), meat (13.0%) and fruit/vegetables (13.0%) were the most frequently reported items. Food allergy decreased with age, from 22.6% in participants below 25 years of age to 12.0% in those above 35 years of age (P for trend $=0.03$).

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Table 1 Risk of self-reported food and drug allergy according to sociodemographic factors.

	All participants, *n* (%)	Participants reporting allergy to					
		Foods		Drugs (excluding chloroquine)		Chloroquine	
		n (%)	OR (95% CI)	*n* (%)	OR (95% CI)	*n* (%)	OR (95% CI)
Ethnicity[a]							
Non-black	190 (37.5)	38 (20.0)	1	33 (17.4)	1	6 (3.2)	1
Black	317 (62.5)	59 (18.6)	0.9 (0.56-1.48)	38 (12.0)	0.6 (0.38-1.11)	57 (18.0)	6.7 (2.82-14.43)
Education							
University students	447 (87.8)	89 (19.9)	1	64 (14.3)	1	49 (11.0)	1
University staff	62 (12.2)	8 (12.9)	0.6 (0.25-1.37)	7 (11.3)	0.8 (0.30-1.85)	15 (24.2)	2.6 (1.27-5.23)
Age (years)							
<25	217 (42.6)	49 (22.6)	1	25 (11.5)	1	14 (6.5)	1
25-35	200 (39.3)	37 (18.5)	0.8 (0.47-1.30)	32 (16.0)	1.5 (0.80-2.68)	28 (14.0)	2.4 (1.14-4.92)
>35	92 (18.1)	11 (12.0)	0.5 (0.21-0.99)	14 (15.2)	1.4 (0.64-2.96)	22 (23.9)	4.6 (2.08-10.07)
Sex							
Female	282 (55.4)	62 (22.0)	1	53 (18.8)	1	29 (10.3)	1
Male	227 (44.6)	35 (15.4)	0.6 (0.40-1.05)	18 (7.9)	0.4 (0.20-0.68)	35 (15.4)	1.6 (0.91-2.80)
Course[b]							
Non-health-related	377 (84.3)	72 (19.1)	1	43 (11.4)	1	41 (10.9)	1
Health-related	70 (15.7)	17 (24.3)	1.4 (0.71-2.59)	21 (30.0)	3.3 (1.73-6.37)	8 (11.4)	1.1 (0.43-2.51)
Place of birth[c]							
Maputo	265 (61.2)	46 (17.4)	1	35 (13.2)	1	20 (7.5)	1
South	69 (15.9)	9 (13.0)	0.7 (0.33-1.54)	9 (13.0)	1.0 (0.45-2.16)	17 (24.6)	4.0 (1.96-8.16)
Centre	62 (14.3)	16 (25.8)	1.7 (0.86-3.18)	11 (17.7)	1.4 (0.67-2.98)	2 (3.2)	0.4 (0.09-1.80)
North	37 (8.5)	13 (35.1)	2.6 (1.22-5.44)	3 (8.1)	0.6 (0.17-1.99)	9 (24.3)	3.9 (1.64-9.48)

[a] Sum of participants in each category is less than the total number of participants due to missing data.
[b] Only students were included.
[c] Only students born in Mozambique were included.

Food allergy was significantly more frequent in students born in the North of Mozambique (35.1%) compared with those from Maputo (17.4%) (Table 1).

Drug allergy was reported by 25.0% of the participants, most frequently to chloroquine (47.1%), β-lactams (15.5%), aspirin (11.0%) and co-trimoxazol (8.8%). As shown in Table 1, a different pattern of association with sociodemographic factors was observed for self-reported allergy to chloroquine compared with other drugs. On the one hand, chloroquine allergy was more frequent in blacks (18.0%) compared with non-blacks (3.2%), in the staff (24.2%) compared with students (11.0%), and increased with age, from 6.5% in those below 25 years of age to 23.9% in those aged more than 35 years (P for trend <0.001). On the other hand, females (18.8%) compared with males (7.9%), and students in health-related courses (30.0%) compared with other teaching areas (11.4%) were more likely to report allergy to other drugs. No significant differences were observed in the prevalence of drug allergy other than chloroquine according to place of birth, but chloroquine allergy was more frequently reported by students born in provinces from the South (24.6%) or North (24.3%) compared with those born in Maputo (7.5%).

The prevalence of self-reported food allergy in this study was in the upper range of previous reports.[2,3] Seafood allergy was the most frequent, probably because the studied population easily accesses these histamine-rich foods, usually responsible for allergy-like symptoms. As in other surveys,[2-4] food allergy was more frequent in women and decreased with age. We also observed differences in the frequency of food allergy according to the place of birth, probably reflecting the geographical influences on exposure to allergens, as previously postulated to explain intercountry differences.[2]

We observed a 25.0% prevalence of drug allergy, and half of these study participants reported

allergy to chloroquine. This might reflect the large exposure to chloroquine in this African country, or the highly frequent itching produced by antimalarial drugs in black patients.[6] We did not evaluate chloroquine-specific IgE in participants with chloroquine-induced pruritus, but the available evidence does not support an IgE-mediated mechanism.[6,7] Although not well understood, this effect may have a genetic basis or relate to chloroquine affinity for melanin.[6] The differences in the frequency of self-reported chloroquine allergy according to place of birth may reflect patterns of exposure to this drug.

As in previous Western reports, allergy to antibiotics was the most frequent drug allergy,[1] particularly in university students,[5] and drug allergy (excluding chloroquine) was more frequent in women.[8-10] Students from health-related courses had a higher risk of drug allergy than other students, possibly reflecting easier access to medicines and a higher probability of sensitization.

The study subjects were volunteers, and it could be argued that those with allergies would have been more likely to participate. However, allergy was not the main focus of the health survey, and it is unlikely that the perception of food or drug allergy status could be a determinant of participation in our study. In addition, in this institution, the overall proportion of males, the median age, the age range and the proportion of students in health-related courses were similar to the distribution observed in our sample (data not shown).

Self-reports are known to overestimate allergy prevalence as it is difficult to distinguish between true allergy and hypersensitivity, and information on both can be provided when participants are specifically questioned about allergy. The study of highly educated individuals may have contributed to improve the accuracy of self-reported information, but these participants do not represent the whole Mozambican population, and sociodemographic differences contribute to distinct patterns of exposure to food and drugs, with potential effects on the frequency of self-reported allergies.

In this Mozambican population, food and drug allergy features, especially the identified allergens, differ from those observed in Europe and North America. Further investigation is needed to understand the contribution of exposure to allergens, the genetic make-up of populations, and the culturally driven interpretation of symptoms for the shown geographical differences.

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