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Prevalence of primary hyperidrosis and its impact on the work of health professionals

Prevalência da hiperidrose primária e seu impacto no trabalho de profissionais de saúde

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ABSTRACT
To evaluate the prevalence and impact of Primary Hyperhidrosis (PH) on the work activities of health professionals at a public hospital, a reference in Urgency and Emergency. This is a cross-sectional, descriptive, exploratory, quantitative study carried out with health professionals from a public hospital that is a reference in Urgency and Emergency in the state of Sergipe, Brazil. The instruments used were the questionnaire on diagnostic criteria, quality of life and the impact of PH on work activities. The Shapiro-Wilk, Kruskal-Wallis and Mann-Whitney tests were applied. Participants of this study were 658 professionals; the prevalence of PH was 11%. Among the patients with PH, 43% reported having difficulties during work activities. All work activities in the health field were mentioned with limitations in execution by the evaluated professionals, the most mentioned were writing (88%), followed by the use of personal protective equipment (81%). PH had a relevant prevalence in health professionals with significant negative impairment in their quality of life and work.

Keywords: Quality of life. Hyperhidrosis. Health personnel. Health impact assessment.

RESUMO
Avaliar a prevalência e o impacto da Hiperidrose Primária (HP) nas atividades laborais de profissionais de saúde de um hospital público referência em urgência e emergência. Trata-se de uma pesquisa transversal, descritiva, exploratória e quantitativa, realizada com profissionais de saúde de um hospital público referência em urgência e emergência do Estado de Sergipe, Brasil. Os instrumentos utilizados foram o questionário critérios de diagnósticos, de qualidade de vida e sobre impacto da HP nas atividades laborais. Empregaram-se os testes Shapiro-Wilk, Kruskal-Wallis e Mann-Whitney. Participaram do estudo 658 profissionais; a prevalência de HP encontrada foi 11%. Dos portadores de HP, 43% relataram apresentar dificuldades durante as atividades laborativas. Todas as atividades laborais no âmbito da saúde foram referidas com limitações na sua execução pelos profissionais avaliados, sendo a mais referida a escrita (88%), seguida da utilização de equipamentos de proteção individual (81%). A HP teve prevalência relevante nos profissionais de saúde com comprometimento negativo importante na sua qualidade de vida e laboral.

Palavras-chave: Qualidade de vida. Hiperidrose. Pessoal de saúde. Avaliação do impacto na saúde.

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INTRODUCTION

Hyperhidrosis is a disorder characterized by excessive sweat production, exceeding the physiological needs for body thermoregulation[1]. Its etiology can be idiopathic (primary) that occurs due to hyperactivity of the sympathetic nervous system, or secondary to other diseases such as spinal cord injuries, metabolic disorders[2].

Studies on primary hyperhidrosis (PH) are necessary, since its prevalence is controversial, with values ranging from 0.6% to 16.8%[3,4]. PH disorders appear at any stage of life and are responsible for embarrassment among their patients, which impairs daily activities, as well as the work performance of professionals who require skills, dexterity and agility in times of tension. PH impacts the performance of personal and professional life[3,5,6].

Although hyperhidrosis is not considered a serious disease, it accompanies a negative impact on the quality of life (QL) of its patients, as it has psychological, physical, social, professional consequences, as well as leisure activities[2,7]. The impaired QL of patients with PH is compared to patients with chronic diseases such as renal failure, severe psoriasis and rheumatoid arthritis[8,9].

The severity of the impacts of PH on patient QL is addressed in the literature in the form of questionnaires with their consequent scales, whether generalized or specific[2]. The validation of the questionnaire by Campos et al. provided the standardization of the assessment of QL in patients with this condition, allowing to estimate the relationships of PH in the personal, social and professional aspects[10].

This condition causes difficulties in the daily activities of its patients, especially those who use manual activities, such as health professionals, who still have no evidence of primary hyperhidrosis in this population. Therefore, the objective was to assess the prevalence and impact of PH on the work activities of health professionals at a public hospital that is a reference in urgency and emergency.

METHODOLOGY

The present study followed the STROBE guidelines for defining the methodological steps. This is a cross-sectional, descriptive, exploratory, quantitative study, carried out with health professionals at the Hospital of Urgency of Sergipe (HUSE), which is a reference for Urgency and Emergency care in the state of Sergipe. The study population consisted of health professionals who provide direct patient care at HUSE, which corresponds to 3,139 employees.

The sample was calculated using the Barbetta formula[11], using a 95% Confidence Interval and a sampling error of 0.05. The minimum sample calculated was 355 professionals. All health professionals (assistants, technicians and graduates) from HUSE were included. Excluding those who were out of office or in a management position.

Data were collected from june 2018 to july 2019, through the active search for health professionals at HUSE during working hours or right after the shift (morning, afternoon or night) of the participant. Each participant was personally approached by the examiner, sent to a comfortable environment for clarification about the research, where the latter, when accepting to participate, signed the informed consent form (ICF).

Initially, the Diagnostic Criteria Questionnaire was applied, already validated by Felini et al.[12], which defines the criteria for defining the diagnosis of PH. Professionals who obtained a negative result according to the approached assessment, did not follow the other questionnaires because they were not the target audience of this study. Meanwhile, those who had a positive result, continued to answer the other questionnaires. The latter had the diagnosis of primary hyperhidrosis confirmed by a specialist physician.

Professionals diagnosed with PH answered two other questionnaires. The first part of the quality of life (QL) questionnaire, validated by Campos et al.[10]. For this study, since it is not the objective of

the research to evaluate the impact of hyperhidrosis treatment on the individual's QL. This instrument assesses twenty activities in four domains: Functional-social, personal, emotional and special conditions. The total score of the questionnaire varies from 20 to 100 points and is obtained by the sum of the evaluation of each activity, classified into five levels of satisfaction. Thus, the sub scores are classified as very poor, above 84; poor, 68 to 83 points; good, 52 to 67 points; very good, 36 to 51 points; excellent, 20 to 35 points.

Finally, the questionnaire, Impact of Primary Hyperhidrosis on the work activity of health professionals, was used to assess the socio-demographic and professional profile, in addition to the impact of hyperhidrosis on the work activity of health professionals, self-made questionnaire and validated by 4 professionals expert in Hyperhidrosis. This instrument is composed of variables inherent to identification, education, time in the profession, workload, perception of the disease and main activities inherent to the profession that are affected by the condition of excessive sweating.

All systematized data were fed into an Excel 2016 spreadsheet. Prevalence was obtained from the sum of the professionals who scored 'yes' and two more items from the first questionnaire and quality of life was assessed using the final scores on the second form.

For data analysis, the Stats package of the software The R Project for Statistical Computing - R (v.3.5.1) was used. The Chi-Square test was applied in order to verify whether the profile of the professionals who marked 'no' is the same as the profile of the professionals who marked 'yes', taking into account the following variables: Gender, Age Group and Position. The Shapiro Wilk test was applied to check for normality in data distribution. ANOVA was applied to associate the prevalence of primary hyperhidrosis in health professionals with the quality of life and the same with the variables: sex, age group, level of qualification, time in the profession, symptom onset, symptom intensity and limitations in performing procedures due to hyperhidrosis. Student's t-test was used to compare two unpaired groups to compare the means of quality of life between groups. The level of significance used was 5%.

Research approved by the Research Ethics Committee of University Tiradentes, under Opinion 2.310.764.

RESULTS

Participants in the study were 658 health professionals. Of these 75 (11%) had excessive, localized and visible sweat (Table 1).

Table 1. Proportion of those who answered that they have excessive, located and visible sweat according to the total number of professionals interviewed at HUSE, Aracaju, state of Sergipe, Brazil (n = 658)

(Continua)

	Interviewees		Have hyperhidrosis		Proportion by category
	n	%	n	%	%
Sex					
Female	437	66	48	64	11
Male	221	34	27	36	12
Position					
Nursing assistant	240	36	27	36	11
Social worker	20	3	0	0	0
Oral and maxillo-facial Surgeon	18	3	3	4	17
Nurse	68	10	12	16	18
Biochemical pharmacist	1	0	0	0	0
Physical therapist	31	5	4	5	13
Speech therapist	9	1	1	1	11
Surgical instrument technician	3	0	0	0	0
Physician	177	27	18	24	10
Nutritionist	18	3	2	3	11
Laboratory technician	38	6	3	4	8

(Conclusão)

	Interviewees		Have hyperhidrosis		Proportion by category
	n	%	n	%	%
X-Ray technician	35	5	5	7	14
Age group					
Under 30	65	10	9	12	14
From 30 to 39 years	307	47	36	48	12
From 40 to 49 years	157	24	18	24	11
Over 50 years	92	14	12	16	13
Empty	37	6	0	0	0
Total	658	100	75	100	11

Table 2 lists the sociodemographic profile of health professionals with PH. There was a predominance of female (64%), brown (57%) professionals, aged between 30 and 39 years (48%), most having attended high school (45%), occupying the position of nursing assistant (36%), with time in office between 6 and 10 years (47%) and who had symptoms of hyperhidrosis in adolescence (48%).

As for knowledge about hyperhidrosis, 83% interviewed professionals reported that they considered excessive sweating to be a disease. However, 84% professionals never sought treatment for hyperhidrosis.

Table 2. Sociodemographic profile of professionals with Primary Hyperhidrosis at HUSE, Aracaju, state of Sergipe, Brazil (n=75)

(Continua)

	n	%
Sex		
Female	48	64
Male	27	36
Skin color		
White	29	39
Brown	43	57
Black	3	4

(Conclusão)

	n	%
Age group		
Under 30	9	12
From 30 to 39 years	36	48
From 40 to 49 years	18	24
Over 50 years	12	16
Qualification level		
High school	34	45
Higher education	11	15
Specialization	30	40
Cargo		
Nursing assistant	27	36
Oral and maxillofacial surgeon	3	4
Nurse	12	16
Physical therapist	4	5
Speech therapist	1	1
Physician	18	24
Nutritionist	2	3
Laboratory technician	3	4
X-Ray technician	5	7
Time in the profession		
From 1 to 5 years	11	15
From 6 to 10 years	35	47
Over 10 years	29	39
Onset of symptoms		
Childhood	15	20
Adolescence	36	48
Adulthood	24	32
Total	75	100

According to the characteristics of hyperhidrosis, 96% professionals have the disease in the palmar area, 85% professionals have the disease in the plantar area, 77% in the axillary area, 31% in the facial area and 10% in the craniofacial area. When asked about the intensity of the symptoms, it can be seen that 20% belong to score 0 (wet and/or moderate cold area), 48% belong to score 1 (sweating

exteriorized through underwear) and 32% have score 2 (drip).

Regarding the limitations of health professionals due to hyperhidrosis, 43% PH patients interviewed, reported having difficulties during work activities.

Table 3 describes the limitations of health professionals in performing procedures due to Hyperhidrosis. The most reported were written assessments by 88% professionals and the use of personal protective equipment by 81%.

Table 3. Limitations in the execution of procedures, due to hyperhidrosis, in health professionals at HUSE, Aracaju, state of Sergipe, Brazil (n = 75)

Procedures	Limitations in the execution due to hyperhidrosis							
	Great limitation		Medium limitation		Little limitation		No limitation	
	n	%	n	%	n	%	n	%
Conduct written evaluations	3	4	40	53	23	31	9	12
Use of personal protective equipment	10	13	27	36	24	32	14	19
Perform sterile procedures	0	0	9	12	22	29	44	59
Preparation of medicines	0	0	10	13	25	33	40	53
Perform physical examination	0	0	7	9	28	37	40	53
Making medical records	3	4	34	45	21	28	17	23
Difficulty in handling dressing forceps	0	0	0	0	17	23	58	77
Difficulty cutting plasters or micropore	2	3	13	17	26	35	34	45
Communication with the patient	0	0	7	9	21	28	47	63

When assessing quality of life in relation to PH, it can be seen that 49 (65.3%) professionals considered their quality of life to be good, 24 (35%) evaluated it as poor and 2 (2.7%) classified it as too bad.

Table 4. Number and percentage of professionals with the presence or absence of visible, excessive, localized sweat distributed according to the profile. Aracaju, state of Sergipe, Brazil (n = 658)

Variables	Has excessive, located, visible sweat						*P-value*
	No		Yes		Total		
	n	%	n	%	n	%	
Sex							
Female	389	89	48	11	437	100	0.819
Male	194	88	27	12	221	100	
Position							
Nursing assistant	213	89	27	11	240	100	
Social worker	20	100	0	0	20	100	
Oral and maxillofacial surgeon	15	83	3	17	18	100	
Nurse	56	82	12	18	68	100	
Biochemical pharmacist	1	100	0	0	1	100	
Physical therapist	27	87	4	13	31	100	0.880
Speech therapist	8	89	1	11	9	100	
Surgical instrument technician	3	100	0	0	3	100	
Physician	159	90	18	10	177	100	
Nutritionist	16	89	2	11	18	100	
Laboratory technician	35	92	3	8	38	100	
X-Ray technician	30	86	5	14	35	100	
Age group							
Under 30	56	86	9	14	65	100	
From 30 to 39 years	271	88	36	12	307	100	
From 40 to 49 years	139	89	18	11	157	100	0.210
Over 50 years	80	87	12	13	92	100	
Empty	37	100	0	0	37	100	

P-value: derived from the chi-square test ().

In Table 4, it was noted that the variables gender, position and age group had no significant difference, therefore, the profiles of professionals with the presence or absence of excessive localized sweat are similar.

Table 5 lists the QL score due to PH, in which it was observed that there was a significant difference only for the intensity of symptoms ($p<0.001$). Thus, at least one of the mean values is different when the intensity of the symptoms is different.

Table 5. Distribution of the mean score, standard deviation, minimum and maximum quality of life, due to hyperhidrosis, assigned by HUSE professionals. Aracaju, state of Sergipe, Brazil (n=75)

	Minimum	Maximum	Mean	Standard deviation	*P-value*
Sex					
Female	23	91	62.31	11.85	0.441
Male	45	81	63.83	8.85	
Age group					
Under 30	42	73	60.44	11.04	
From 30 to 39 years	23	91	63.00	12.29	0.656
From 40 to 49 years	41	80	61.50	10.45	
Over 50 years	55	81	65.92	7.10	
Qualification level					
High school	41	81	62.18	9.12	
Higher education	23	81	59.00	16.00	0.285
Specialization	42	91	64.90	10.61	
Position					
Nursing assistant	41	80	62.07	9.88	
Oral and maxillofacial surgeon	56	74	66.67	9.45	
Nurse	23	73	56.75	14.16	
Physical therapist	57	81	72.25	10.87	
Speech therapist	66	66	66.00	.	0.381
Physician	42	91	63.59	11.62	
Nutritionist	70	70	70.00	0.00	
Laboratory technician	60	64	61.67	2.08	
X-Ray technician	60	81	66.00	8.49	
Time in the profession					
From 1 to 5 years	23	81	59.27	15.58	
From 6 to 10 years	41	91	62.97	9.89	0.488
Over 10 years	41	81	63.93	10.26	
Onset of symptoms					
Childhood	42	81	63.44	8.38	
Adolescence	23	91	60.47	17.34	0.598
Adulthood	66	66	66.00	.	
Intensity of symptoms					
Score 0	23	70	50.27	11.19	
Score 1	41	91	63.72	7.88	0.000*
Score 2	55	81	69.25	8.24	

Legend: *significant at 5%

As can be seen in Table 6, there are indications that, on average, professionals who have disease intensity with a score of 2 (69.25) is greater than that of professionals with a score of 1 (63.72) and a score of 0 (50.27). These results suggest that the higher the level of hyperhidrosis symptoms, the worse the quality of life.

Table 6. Comparison of the average quality of life score in relation to hyperhidrosis according to symptom intensity (pairwise)

Symptom intensity	Score 0	Score 1	Score 2
Score 0	-	-	-
Score 1	0.000*	-	-
Score 2	0.000*	0.011*	-

Legend: *significant at 5%

DISCUSSION

In the present study, the prevalence of PH found was 11%, with nursing assistant and physician being the most prevalent positions. This prevalence is close to those reported by more recent studies, such as that carried out with medical students in Sergipe (14.7%)[8], with employees of companies and students of schools in Japan (12.7%)[13], with employees of companies in Germany (16.6%)[4] and with medical students in Poland (16.7%)[14]. Older researches describe lower values such as that carried out in Israel (1%)[15] and in the USA (2.8%)[1]. The increasing prevalence found in current publications can be explained by the different study methodologies, the greater clarification of PH and, consequently, a greater investigation of the disease.

There was no difference in PH in relation to sex, as found in other studies[16-18]. Nevertheless, the prevalence in women, can be explained due to the position in the sample studied, with the highest number of nursing assistants, who is mostly occupied by women, with the impression that PH predominates among women.

The brown color was the most reported by PH patients, followed by white and black, similar to that found by other studies[9,19]. The most observed age group was 30 and 39 years old, similar to Strutton *et al.*[1], who described a mean age of the patients at 39.8 years. In other studies, younger ages were observed, such as Lima *et al.* 23 years[8], Fiorelli *et al.* 25.4 years[2] and Lima *et al.* 21.57 years[9]. There is a scarcity of studies evaluating the prevalence of ethnicity in patients with PH, however blacks are the least affected by this condition[9].

The phase of onset of symptoms most reported by PH patients was adolescence, as reported by Moraites et al.[16], in which clinical manifestations started between 14 and 25 years of age, and by Tu et al.[20], who started between 4 and 22 years old. Sweat is produced by eccrine and apocrine glands, apocrine glands do not have a fully established function before puberty[21]. What justifies the onset of symptoms of PH in the early stages of life, which causes damage in daily and work activities, and so early diagnosis and treatment are important, in order to minimize negative impacts on QL of patients.

The most affected areas were palmar, plantar and axillary. Data agree with the studies of, where the palmar area was the most affected followed by the axillary[22,23]. The presence of eccrine glands justifies the process involved in PH, which explains their location, as they are present in greater number of the axilla, palms and soles[24]. The sites most affected by people with PH are visible areas, which can cause nervousness, anxiety, embarrassment, especially if it is accompanied by a foul odor, known as bromhidrosis.

The presence of excessive sweat was considered a disease by 83% professionals with PH, however only 16% professionals sought some type of treatment. A review study on the treatment of PH found that only 38% patients seek care from a health professional because of PH[19]. In the present study, participants are health professionals, and yet they live with the signs and symptoms caused by excessive sweating without being aware that it is a chronic

disease and that it has treatment. It is evident that early diagnosis and treatment reduce the negative impacts on the quality of life of patients with PH.

Impairment of work activities was reported by 43% people with PH. A study carried out with the population of Aracaju showed that 30.6% participants who had PH reported having some type of impairment in daily activities and 76.5% reported increased sweating in situations of stress[25]. Researchers state that individuals with PH, especially in the axillary and facial regions, have a higher incidence of anxiety when compared to the general population[2,26,27]. Thus, excessive sweating can increase due to emotional stimuli, causing impairment in daily activities. This is evident when activities need contact with the public, as is the case with health professionals.

All limitations in work activities were mentioned by health professionals with PH, in which the written assessment was the most reported (88%), followed by the use of personal protective equipment (81%). According to Santos *et al.*[27], work activities lead to increased stress, thereby increasing sweating, generating more anxiety in PH patients. Individuals with palmar HP are exposed to the risk of occupational accidents caused by excessive sweating, as this risk is higher in professions that handle instruments.

When assessing quality of life, none of the participants rated it as excellent or very good. The worst descriptions of symptom intensity, score 1 (sweating exteriorized through underwear) and score 2 (drip) have lower QL ratings. These data are similar to those found in other studies that evaluated the QL of patients with PH, in which they confirm that regardless of the work, PH causes profound discomfort and negative impact on QL in professional and social environments[23,29]. Patients with this condition, even with a milder score, declared that they interfered with their performance in daily work activities due to the presence of PH.

The intensity of symptoms of PH is directly proportional to the impact on QL. There was an important negative impairment on the QL of patients, 35% rated it as poor and 2.7% as very poor. Individuals with PH neglect about their negative involvement, although there is considerable impairment in their daily activities, this is due to social segregation resulting from the disease[3,5,30]. The omission of some carriers of PH about their disease causes them not to seek treatment due to lack of knowledge or shame in assuming that they have this condition.

These facts demonstrate the need for greater advertising about HP and its consequences in the population. Although this is considered a chronic disease that begins in the first decades of life, and causes biopsychosocial interference, patients and even health care providers, are unaware of its existence as a disease.

Therefore, the advantage of early diagnosis and treatment of the disease is reaffirmed, in order to reduce the impacts on the daily and work activities of patients with PH. The present study presented as a limitation the sample restricted to a hospital, as it is the only one reference in urgency and emergency in the state of Sergipe. Even though the researched sample is higher than the one defined by the Barbetta formula, researches that address the prevalence of PH should be conducted by researchers trained to identify this condition, analyzing the profile of patients and non-patients, in order to better confirm the results of the present study.

CONCLUSION

The prevalence of primary hyperhidrosis in health professionals at a public hospital of reference in Urgency and Emergency, Aracaju, state of Sergipe, was 11%. All work procedures performed by health professionals suffered limitations due to Primary Hyperhidrosis. The highest scores of symptom intensity indicated a negative impact on quality of life, data that emphasize the importance of greater dissemination of PH as a treatable disease.

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