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RESEARCH

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IMPACT OF HYPERHIDROSIS ON NURSING WORK ACTIVITIES IN A HOSPITAL FOR URGENT AND EMERGENCY CARE

Impacto da hiperidrose nas atividades laborais da enfermagem em um hospital de urgência e emergência

Impacto de la hiperhidrosis en las actividades de trabajo de enfermería en un hospital de emergencia

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ABSTRACT

Objective: The study's main purpose has been to assess both the prevalence and impact of primary hyperhidrosis on the activities and quality of life of nursing professionals working in a public hospital. **Methods:** It is a cross-sectional study with 363 nursing professionals from a Public Referral Hospital for Urgent and Emergency Care in the *Sergipe* State, Brazil. There was used a questionnaire addressing diagnostic criteria, quality of life and the impact of primary hyperhidrosis on work activities. **Results:** There was found a primary hyperhidrosis prevalence of 11% in nursing professionals, worsening under stress in 27 (68%) of the professionals, and three (8%) reported impairment in daily activities. All limitations were mentioned to be happening in the implementation of nursing procedures, the most cited being written assessment by 37 professionals (93%), and the use of personal protective equipment by 31 (79%). **Conclusion:** Primary hyperhidrosis had a high prevalence in nursing professionals ultimately producing a negative impact on bearer's quality of life, even when mild or moderate.

Descriptors: Hyperhidrosis, Quality of life, Nursing team, Sweating, Sickness impact profile.

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RESUMO

Objetivo: Avaliar a prevalência e o impacto da hiperidrose primária nas atividades e qualidade de vida dos profissionais de enfermagem de um hospital público. **Métodos:** estudo transversal com 363 profissionais de enfermagem de um Hospital Referência em Urgência e Emergência de Sergipe, Brasil. Utilizou-se questionário de critérios diagnósticos, qualidade de vida e sobre o impacto da hiperidrose primária nas atividades laborais. **Resultados:** a prevalência da hiperidrose primária foi de 11%, com a piora em situação de estresse em 27 (68%) dos profissionais e três (8%) referiram comprometimento nas atividades diárias. Todas as limitações foram referidas na execução de procedimentos de enfermagem, sendo as mais citadas avaliação escrita por 37 profissionais (93%) e utilização de equipamentos de proteção individual por 31 (79%). **Conclusão:** a hiperidrose primária teve alta prevalência nos profissionais de enfermagem com comprometimento negativo na qualidade de vida dos portadores, mesmo quando em grau leve e moderado.

Descritores: Hiperidrose, Qualidade de vida, Equipe de enfermagem, Sudorese, Perfil de impacto da doença.

RESUMEN

Objetivo: Evaluar la prevalencia y el impacto de la hiperhidrosis primaria en las actividades y la calidad de vida de los profesionales de enfermería en un hospital público. **Métodos:** estudio transversal con 363 profesionales de enfermería de un hospital de referencia en urgencias y emergencias en Sergipe, Brasil. Se utilizó un cuestionario sobre criterios diagnósticos, calidad de vida y sobre el impacto de la hiperhidrosis primaria en las actividades laborales. **Resultados:** la prevalencia de hiperhidrosis primaria fue del 11%, con empeoramiento bajo estrés en 27 (68%) de los profesionales y tres (8%) informaron deterioro en las actividades diarias. Todas las limitaciones se mencionaron en la implementación de los procedimientos de enfermería, siendo la evaluación escrita más citada por 37 profesionales (93%) y el uso de equipos de protección personal por 31 (79%). **Conclusión:** la hiperhidrosis primaria tuvo una alta prevalencia en profesionales de enfermería con un deterioro negativo en la calidad de vida de los pacientes, incluso cuando era leve y moderada.

Descriptor: Hiperhidrosis, Calidad de vida, Grupo de enfermería, Sudoración, Perfil de impacto de enfermedad.

INTRODUCTION

Hyperhidrosis can be primary or secondary, constituting a dermatological condition characterized by excessive production of sweat in the body. Primary Hyperhidrosis (PH) can affect regions such as the hands, armpits, feet, face, among others, and occurs due to hyperactivity of the sympathetic nervous system. This arises from genetic factors, which is characterized, in general, as bilateral, symmetrical, and focal. While the secondary is associated with certain diseases or the use of medications, it is therefore essential that its diagnosis be excluded before that of primary hyperhidrosis.¹

Disorders of primary hyperhidrosis appear at any stage of life, being responsible for the embarrassment among patients and hampering some manual skills. The quality of life is impaired during work performance, especially in professions that require dexterity, agility, and those trigger moments of tension.² Studies show that in addition to the

undeniable social discomfort, primary hyperhidrosis also generates negative impacts on the emotional aspects of individuals, hampering them from the clothes to be worn in their daily lives, even being a determining factor for the choice of the profession or even causing mitigation to the full exercise of it. It should also be considered that due to the social segregation resulting from PH itself, individuals bearing this condition are silent about the harmful effects of the disease.²⁻⁴

The pool of studies addressing the effects of PH on health professionals is rather small, considering that nursing professionals experience stressful situations, rely on manual dexterity and on interaction as a member of the multidisciplinary team in their daily lives. Bearing the aforesaid in mind, this work meant to assess both the prevalence and impact of PH on the activities and quality of life of nursing professionals working in a Public Hospital for Urgent and Emergency Care from the *Sergipe* State, Brazil.

METHODS

It is a descriptive-exploratory research with a quantitative approach, which was performed with nursing professionals working at the *Hospital de Urgência de Sergipe – HUSE* [Hospital for Urgent and Emergency Care], located in the Aracajú city, Sergipe State, Northeast region of Brazil.

The study population consisted of nursing professionals who provide direct assistance to the HUSE patient, which corresponded to 1,914 servers, during the collection period, from July to August 2017. A conservative prevalence of 50% was estimated, with a margin of error of 5% and 95% confidence interval. The minimum sample determined by the formula of Barbeta⁵ was 330 professionals and 10% were added considering the possible losses that may compromise the representativeness of this sample. Hence, the number of the minimum sample was 363 professionals.

All nursing professionals (assistants, technicians, and graduates) from the HUSE were included in this research. Excluding professionals who were executing other job position or in a management position.

Data collection took place through the active search for nursing professionals at the HUSE during working hours or right after the participant's shift (morning, afternoon or night). Each participant was personally approached by the examiner, for clarification about the research, where he/she accepted to participate, signed the Informed Consent Form (ICF).

There was applied the questionnaire of diagnostic criteria created by Fenili,⁵ which defines objective criteria for defining diagnosis. The professionals who answered, in the first question, "no" or those who answered "yes", nevertheless, did not mention at least two more characteristics described in the second question of this

form, did not follow the filling of the others because they did not contemplate the target audience of this study. Those who marked “yes” and pointed out two more characteristics, continued to answer the other questionnaires.

After the first questionnaire, the others were applied, the one on quality of life, described by Campos et al.⁶ Here, the first part of the questionnaire was used since it is not the objective of the research to evaluate the impact of the treatment of hyperhidrosis in the individual's quality of life. This instrument assesses twenty activities in four domains: Functional-social, personal, emotional, and special conditions. The total score of the questionnaire ranges from 20 to 100 points, obtained by the sum of each activity, which is classified into five levels of satisfaction. So, the subscores are classified as very bad, above 84; bad, 68 to 83 points; good, 52 to 67 points; very good, 36 to 51 points; excellent, 20 to 35 points.

Conclusively, the questionnaire named Impact of Primary Hyperhidrosis on the work activity of health professionals was used to assess the sociodemographic and professional profile, in addition to the impact of hyperhidrosis on the work activity of health professionals. A self-made questionnaire, consisting of variables inherent to identification, education, time in the profession, workload, perception, and characteristics about the disease and main activities inherent to the profession that are affected by the condition of excessive sweating. This questionnaire classifies the PH according to the intensity of the symptoms, score 0 when there is a wet and/or cold area, score 1 when sweating exteriorizes through clothes, and score 2 when there is a drip.

The prevalence was obtained through the sum of the professionals who scored “yes” and two more items from the first questionnaire, and the quality of life was assessed through the final scores on the second form.

The Excel 2016 was used for data handling. For data analysis, the Stats package of the software named The R Project for Statistical Computing - R (v.3.4.2) was used. The Shapiro Wilk, Kruskal-Wallis, and Mann-Whitney tests were used. Targeting to compare the presence or absence of mental suffering and which groups most affected, the Chi-square test (χ^2) was used. The significance level used was 5%.

This research was approved by the Research Ethics Committee from the *Universidade Tiradentes (UNIT)* under the Legal Opinion No. 2.310.764.

RESULTS

A total of 363 nursing professionals participated in the study, being 68 registered nurses, 54 females and 14 males, and 295 among nursing assistants and nurse technicians, comprising 257 females and 38 males. Considering these numbers, 39 (11%) reported having excessive, localized, and visible sweat, 12 nurses, and 27 nursing assistants and

nurse technicians with a predominance of children under 30 years old (19%). It was noted that the variables gender, occupation, and age group did not show a significant difference (**Table 1**).

Table 1 - Number and percentage of *HUSE* nursing professionals with either presence or absence of visible localized excessive sweat distributed vis-à-vis the profile, Chi-square test, *Aracajú* city, *Sergipe* State, Brazil, 2017

Variables	Has Visible Localized Excessive Sweat						p-value
	No		Yes		Total		
	N	%	N	%	N	%	
Gender							
Female	311	90	33	10	344	100	0.467
Male	52	90	6	10	58	100	
Occupation							
Assistant	268	91	27	9	295	100	0.051
Nurse	56	82	12	18	68	100	
Age Group							
Under 30 years old	34	85	6	15	40	100	0.672
From 30 to 39 years old	160	90	18	10	178	100	
From 40 to 49 years old	89	89	11	11	100	100	
More than 50 years	45	92	4	8	49	100	
Empty	35	100	0	0	35	100	

Concerning sociodemographic characteristics, there was a predominance of female professionals 33 (85%), brown skin color 24 (62%), aged between 30 and 39 years old 18 (46%), mostly holding high school education 24 (61%). The time they have been practicing the profession was 6 and 10 years 19 (49%), and the majority reported having the hyperhidrosis symptoms onset during childhood 27 (69%) (**Table 2**).

Table 2 - Sociodemographic profile of *HUSE* nursing professionals bearing Primary Hyperhidrosis, *Aracajú* city, *Sergipe* State, Brazil, 2017

	Nurse		Assistant	
	N	%	N	%
Gender				
Female	8	67	25	93
Male	4	33	2	7
Skin Color				
White	7	58	8	30
Brown	5	42	19	70
Black	0	0	2	7
Age Group				
Under 30 years old	4	33	2	7
From 30 to 39 years old	7	58	11	41
From 40 to 49 years old	1	8	10	37
More than 50 years	0	0	4	15
Qualification Level				
High school	0	0	24	89
Graduate	4	33	1	4
Specialization	8	67	2	7
Time Practicing the Profession				
Up to 1 year	0	0	0	0
From 1 to 5 years	3	25	3	11
From 6 to 10 years	8	67	11	41
More than 10 years	1	8	13	48
Onset of Symptoms				
Childhood	6	50	21	78
Adolescence	5	42	6	22
Adulthood	1	8	0	0
Total	12	100	27	100

With regard to the hyperhidrosis knowledge, 10 (26%) of nursing professionals who have PH did not consider sweating to be a disease, and 36 (92%) never sought

treatment.

According to the characteristics of hyperhidrosis of nursing professionals at the HUSE, the main areas affected by the disease were palmar 38 (97%), plantar 34 (87%), axillary 30 (77%), facial 10 (26%), and skull-facial 2 (5%). Concerning the intensity of the symptoms, it was observed that 22 (56%) of the nursing professionals had exteriorized sweating through their underwear, score 1, and 14 (36%) presented difficulties during work activities.

It was observed that all limitations were mentioned to be happening in the implementation of nursing procedures due to PH, 36 (93%) report some degree of limitation when performing written evaluations, 32 (82%) have limitations when making notes in medical records, 31 (79%) when using personal protective equipment, 25 (64%) had limitations regarding the preparation of medications, 21 (54%) reported having difficulties in cutting adhesives or micropore, 16 (41%) had limitations in performing the physical examination, 14 (36%) reported when performing a sterile procedure, 10 (26%) mentioned difficulty in handling dressing tweezers, and nine (23%) of nursing professionals have limitations in communicating with patients (Table 3).

Table 3 - Nursing Professionals' Limitations during the execution of procedures in the HUSE due to Hyperhidrosis, Aracajú city, Sergipe State, Brazil, 2017

Procedures	Execution Limitations Due to Hyperhidrosis								Total N
	Severe Limitation		Moderate Limitation		Little Limitation		No Limitations		
	N	%	N	%	N	%	N	%	N
Conducting written assessments	1	3	19	49	16	41	3	7	39
Using personal protective equipment	5	13	11	28	15	38	8	21	39
Performing sterile procedures	0	0	3	8	11	28	25	64	39
Preparing medications	0	0	5	13	20	51	14	36	39
Performing the physical examination	0	0	2	5	14	36	23	59	39
Making notes in medical records	1	3	15	38	16	41	7	18	39
Difficulty in handling dressing tweezers	0	0	0	0	10	26	29	74	39
Difficulty cutting adhesives or micropore	1	3	7	18	13	33	18	46	39
Communication with the patient	0	0	2	5	7	18	30	77	39

It was found that, considering the professionals who have hyperhidrosis, 31 (79%) did not use any strategy to minimize limitations, 25 (64%) felt embarrassed when touching patients because of palmar hyperhidrosis, 22 (56%) in uniform use due to axillary hyperhidrosis. In the interpersonal relationship with the multiprofessional team, 11 (28%) presented some type of embarrassment and 35 (92%) reported that the anxiety symptoms caused the appearance or increase of sweating.

When evaluating the quality of life, it was found that 8 (21%) of nursing professionals consider their quality of life

to be poor in relation to hyperhidrosis.

It was noted that the lowest average scores for quality of life were observed in nursing professionals aged between 40 and 49 years old (61.09), holding a specialization (58.90), who has more than 10 years of career (62.79), who had onset of symptoms in childhood (61.63), who have symptom intensity score 2 (68.00) and who have moderate limitation (67.37) (Table 4).

Table 4 - Distribution of mean score, standard deviation, minimum and maximum quality of life attributed by the HUSE nursing professionals due to hyperhidrosis, Aracajú city, Sergipe State, Brazil, 2017

	Minimum	Maximum	Average	Standard Deviation	p-value
Gender					
Female	24	80	60.55	11.74	0.599
Male	45	68	59.17	7.20	
Age group					
Under 30 years old	42	73	59.33	13.56	0.811
From 30 to 39 years old	24	79	59.33	11.5	
From 40 to 49 years old	41	80	61.09	12.63	
More than 50 years	62	67	60.72	2.21	
Qualification level					
High school	41	80	61.41	9.81	0.539
Graduate	24	73	58.00	20.21	
Specialization	42	78	58.90	10.23	
Time practicing the profession					
From 1 to 5 years	24	73	55.17	18.56	0.914
From 6 to 10 years	42	79	60.16	9.75	
More than 10 years	41	80	62.79	9.57	
Onset of symptoms					
Childhood	43	79	61.63	7.37	0.659
Adolescence	24	80	56.64	17.97	
Adulthood	-	66	66	-	
Intensity of symptoms					
Score 0	24	70	48.40	12.39	0.001*
Score 1	42	80	60.12	7.23	
Score 2	59	79	68.00	7.74	
Limitations in the execution of procedures					
No Limitations	41	56	48.50	10.60	0.076
Little Limitation	24	70	59.21	10.07	
Moderate Limitation	42	80	67.37	13.14	

*significance level of 0.05

The results obtained with p-value were significant only for the intensity of the symptoms (0.001), thus it is concluded that at least one of the means is different when the intensity of the symptoms is different. The Kruskal Wallis non-parametric test did not indicate which degrees differ. For this, the Mann-Whitney test was applied to verify that the samples have equal means. As can be seen, there are indications that the average number of nursing professionals with disease intensity with score 2 (68.00) is higher than that of nursing professionals with score 1 (60.12) and score 0 (48.40). Such results suggest that nursing professionals who have the intensity of symptoms in score 2 give worse grades to their quality of life (Table 5).

Table 5 - Mann-Whitney test in the comparison of the average quality of life score in regard to hyperhidrosis by intensity of symptoms of nursing professionals from the HUSE, Aracajú city, Sergipe State, Brazil, 2017

Intensity of Symptoms	Score 0	Score 1	Score 2
Score 0	-	-	-
Score 1	0.001*	-	-
Score 2	0.003*	0.252	-

*significance level of 0.05

DISCUSSION

Herein, 363 questionnaires were answered, 311 by female subjects (83%), with a prevalence of 11% of primary hyperhidrosis. This is similar to data found in more recent studies, such as that performed with company employees in Germany with 16.6%,⁷ with company employees and school students in Japan with 12.7%,⁸ with medical students in Poland with 16.7%,⁹ and with physical education students in the Sergipe State with 11.1%.¹⁰ Older publications found lower occurrence, such as in Israel with 1%¹¹ and in China with 4.5%.¹² The increase in the prevalence of PH observed in current research can be explained by better knowledge and better investigation of the disease, different study methodologies, and/or regional aspects.

The prevalence of women interviewed in this study can be explained by the profile of nursing professionals, who are mostly women. As there was a higher number of women in the studied group, the proportion of PH affirmative according to gender was performed, it was found that the female had 12% prevalence and the male 13%, in agreement with studies in which the incidence hyperhidrosis was similar in both genders.^{1,12,13}

The prevalence of PH was higher in brown skin color, followed by whites and blacks. The lower prevalence of blacks with PH is similar to the data found in other studies.^{10,13,14} This predominance of browns is probably due to the great miscegenation of races in the *Sergipe* State and the Northeast region.

The most interviewed age group was 30 to 39 years old, and according to the length of the profession, 85% of people bearing PH had been working for at least 6 years. Nonetheless, PH mainly affected younger people under the age of 30. Studies have described an average age of patients with PH of 28.5 years old,¹⁵ 25.4 years old,¹⁶ and 23 years old.³ It is likely that this prevalence concerning age depends on the population studied, however, it appears that PH affects young people.

The period of onset of symptoms most reported by PH patients was childhood followed by adolescence. Other researchers report that the symptoms of PH usually start between 14 and 25 years of age,¹ the onset of clinical manifestations between the ages of 4 and 22 years old, with a peak between 6 and 16 years old, has also been reported.¹² PH begins mainly in childhood and adolescence, times of transition, and personality formation, full of recreational, work, and social relationships. This indicates the need for early diagnosis and treatment, targeting to reduce the negative impact of this disease on people's quality of life.

The anatomical sites most affected by PH were palmar, plantar, and axillary. Similar prevalence events were found, with the palmar site being the most affected (48%), followed by the axillary site (36.4%).¹⁷ The sites most affected by PH are palmar, plantar, and axillary areas, which are visible areas that may suggest nervousness, anxiety, poor hygiene, especially if accompanied by a foul odor, known

as bromhidrosis. In the studied population, it can cause distrust on the part of the patients being assisted, which increases the importance of controlling this disease.

Excessive sweating was considered a disease by 74% of the PH patients interviewed and only 8% sought treatment. In the study carried out in Germany, only 27% of individuals with PH consulted a doctor because of the symptoms of PH,⁷ and 28% used drug therapy. In a review on the treatment of PH, it was found that only 38% of patients seek care from a health professional on account of PH.¹⁴ Here, all individuals with PH were educated, most of them with higher education. These data demonstrate that several carriers of this condition, even nursing workers, live with the signs and symptoms caused by excessive sweating, in addition to their losses. It is clear that early diagnosis and adequate treatment are necessary to improve the quality of life of these patients.

The worsening of sweating under stressful situations was reported by 68% of professionals and 8% reported some type of impairment in daily activities. In the study with medical students, 5.5% of PH patients reported negative interference in daily activities due to the disease,² while in the study with physical education students, 8% reported some type of impairment in daily activities, and 68% showed worsening of sweating under stress.¹⁰ Studies have shown that individuals with PH, especially at the axillary and facial sites, have a higher prevalence of anxiety compared to the general population.^{16,18} It is noted, therefore, that excessive sweating can be exacerbated by stimuli emotional problems leading to impairment in daily activities. This loss is even more evident when related to activities that need contact with the public, such as nursing.

All limitations were mentioned by nursing professionals bearing PH, where the written assessment was the most one, followed by the use of personal protective equipment. Work activities lead to increased stress and, consequently, sweating, which generates more anxiety in people with PH.¹⁰ The risk of accidents caused by excessive sweating, in individuals with palmar PH, is higher in professions that require the handling of instruments, which harms and disadvantages the carrier of the disease.

When using the quality of life questionnaire, respondents reported significant losses in situations such as shaking other people's hands, writing, wearing socks, dancing socially, and having a favorite pastime. The data found were similar to those of other studies, which also evaluated the quality of life, and confirm that PH causes intense discomfort and low self-esteem in its patients, in addition to a negative impact on the quality of life in a social and professional environment.^{13,19-22} Although it is a chronic disease, with significant prevalence, beginning in the first decades of life, with negative biopsychosocial interference, patients themselves and, sometimes, health professionals are unaware of the existence of this condition as a disease. These facts demonstrate the need for more

prominent dissemination of PH through scientific research to better understand its prevalence and consequences both in academia and in the general population.

CONCLUSIONS

There was found a PH prevalence of 11% in nursing professionals working at a Public Referral Hospital for Urgent and Emergency Care from the Aracajú city, Sergipe State, Brazil. In the interview, there was a predominance of female professionals within the age group from 30 to 39 years old, but there was no difference in the prevalence of PH between genders. This disease occurred mainly in the palmar, plantar, and axillary regions. The symptoms of PH started during childhood and adolescence, with impairment in daily and professional activities. All limitations were mentioned in the execution of nursing procedures due to PH, with exacerbation of sweat under stressful situations. Although primary hyperhidrosis is a disease that started in the childhood and youth phase and that negatively impacts the patients' quality of life, both in the personal and professional environments, treatment was inadequately sought. These professionals often neglect the treatment, even though they work in the health field and do know that it is a disease. Such data are able support a broader disclosure concerning the PH, looking for an early diagnosis and adequate therapy, hence enabling better performance of PH-bearing people during their daily activities and during work as well.

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