Acta Derm Venereol 2015; 95: 417–421

INVESTIGATIVE REPORT

Itch Prevalence and Characteristics in a Hispanic Geriatric Population: A Comprehensive Study Using a Standardized Itch Questionnaire

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A cross-sectional study of geriatric patients was performed to provide a comprehensive description of the prevalence and clinical characteristics of chronic itch affecting Hispanic geriatric subjects in Mexico. Participants were recruited from both nursing homes and geriatric ambulatory care centers. Patients without dementia were evaluated using an itch intensity and characteristic questionnaire and were assessed for itch-related dermatoses ($n=302$). Data on medications and underlying systemic diseases were obtained from medical records. The prevalence of chronic itch was 25% in this population. Of those with chronic itch, 69% had xerosis, 28% had itch-related dermatoses, and 96% had documented comorbidities. The most common comorbidities were diabetes mellitus (OR=2.3, 95% CI 1.3–3.9, $p=0.003$) and chronic venous insufficiency (OR=4.4, 95% CI 1.6–12.2, $p=0.002$). The most common areas where patients experienced itch were legs (54%), back (45%), scalp (28%) and arms (27%). Patients experienced the greatest amount of itch in the winter (77%) and during the night (65%). Chronic itch is a common problem in the studied Hispanic geriatric population, and its presence significantly correlates with xerosis, diabetes, and venous insufficiency. *Key words: geriatric; chronic itch; prevalence; characteristics; Hispanic*.

Accepted Sep 9, 2014; Epub ahead of print Sep 9, 2014

Acta Derm Venereol 2015; 95: 417–421.

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The steadily growing geriatric population is a worldwide phenomenon; by the middle of this century 22% of the world's population will consist of those aged ≥60 (1, 2). For this reason alone, it behooves healthcare providers to have a better understanding of the most common clinical complaints within the geriatric population (3–5). Previous work by Ständer et al. (6) and Matterne et al. (7) demonstrated that the greater the age, the greater the risk of pruritus. More recently, Carr et al. (8) found a negative correlation between age and the effect of chronic pruritus on quality of life in a phone survey population of US veterans. These divergent findings warrant a more detailed characterization of chronic itch in the elderly. While numerous studies, from multiple countries, have reported itch as one of the most common geriatric complaints, none have assessed the clinical characteristics and intensity of chronic itch within this population (9–13). In order to assess the prevalence and characteristics of chronic itch in Hispanic geriatric patients, we used an itch intensity and characteristic questionnaire that was translated to Spanish (14).

METHODS

Subjects

Of 342 Hispanic subjects that were approached, 302 (88%) agreed to be examined and studied (120 resided in nursing homes, 182 attended a geriatric outpatient clinic for routine non-dermatological check-ups). Study participants were recruited from the North-Central region of Mexico. Our nursing home population was drawn from both high-income private nursing home residents, as well as low-income public nursing home residents. Furthermore, our nursing home population was diverse in terms of functional status, with the exception of bed bound subjects, who were excluded from this study. Ambulatory care patients were recruited from a diverse population of patients during the course of regular medical follow-up. Physicians deemed all eligible patients mentally capable. Subjects with dementia or Alzheimer's diseases were excluded from participation. The study was approved by the local ethics committee. Each Spanish-speaking subject was approached by a single investigator (RVR) and asked to agree to complete the questionnaire, during a personal interview, after giving informed consent. Patients were interviewed from March 2013 through May 2013.

Review of medical records

Data from patient medical records was collected regarding chronic medical conditions and current medications.

Physical examination

Two licensed dermatologist conducted physical exams of all patients, in addition to assessing patients for the presence of itch-related dermatoses, and xerosis. The investigators were unaware of the questionnaire results at the time of examination. The presence of xerosis was objectively assessed utilizing a standardized tool; the overall dry skin score (ODS) (15). The

 doi: 10.2340/00015555-1968
 ISSN 0001-5555

CEAP classification system was used to assess chronic venous disorders. For the purpose of this study, chronic venous insufficiency (CVI) was defined as the presence of either C1 (telangiectasies or reticular veins) or C2 (varicose veins) (16). Our assessment of chronic venous disorders was intentionally limited to clinical classification; we did not endeavor to assess severity, as this was outside the scope of this study. Chronic itch was defined as itch persisting for 6 or more weeks (17).

The questionnaire

We used a comprehensive questionnaire (Questionnaire for the Assessment of Pruritus), designed to capture the various dimensions and clinical characteristics of pruritus, along with patient demographics and medical history (14). The questionnaire was subsequently translated to Spanish following standard protocols, which included ethics approval, forward and backward translation, expert review, and statistical analysis (18, 19).

The forward–back translation was accomplished in 5 steps: (*i*) The original English version was translated to Spanish by an independent interpreter, (*ii*) The Spanish version was translated back to English by two different interpreters, (*iii*) The two questionnaires were reviewed by the author of the original questionnaire and compared to the original version; we found discrepancies in section one in level of education due to differences in perception of College versus University. In section 3, we found that some words that described itch characteristics were similar to each other when translated to Spanish, such as: pulsating and throbbing; stubborn and insistent, (*iv*) Corrections were made to the Spanish version, and (*v*) A third interpreter translated the questionnaire back to English and compared it with the original version in English finding no differences.

To assess the validation of the questionnaire, kappa statistic for categorical data and the spearman correlation for numerical data were reported (good agreement needs kappa statistic and spearman correlation to be at least 0.7). Twenty-five subjects were used in the validation of the questionnaire, repeated after 2 weeks. The Kappa agreement for Health Status was 0.413, of the 8 (32%) subjects who reported a change in their status in the 2nd week, there were none who had a 2-step difference in their reporting. This variation could be due to patients receiving skin care recommendations and treatments on their first visit. There were strong agreements for frequency of attacks [4 (16%) had a 1-step change with kappa agreement (0.742)], duration of attacks in minutes [4 (16%) had a 1-min change, Spearman correlation (0.954)], intensity of itch (VAS) [4 (16%) had a 1-step change, Spearman correlation (0.982)], scratching pleasure [4 (16%) had a 1-step change, Spearman correlation (0.902)] and itch feeling [2 (8%) had a 1-step change, kappa (0.885)].

The above results showed that there is stability in the questionnaire as all differences, if any, were of a 1-step difference between the 2 periods.

Statistical analysis

All statistical analyses were performed using PASW 18.0 software (SAS, Chicago, IL, USA) with statistical significance set at $p < 0.05$. Descriptive statistics for quantitative variables were presented as mean ± standard deviation (SD) and as percentages for qualitative variables. Differences in quantitative outcomes were assessed using parametric tests when normality and homogeneity assumptions were satisfied; otherwise the equivalent non-parametric tests were used. Bonferroni posthoc was performed when necessary. Associations between categorical variables were determined using chi-square or Fisher's Exact tests; with odds ratios presented where applicable.

RESULTS

Population characteristics and demographics

A total of 302 subjects aged 60 and over, seen in the outpatient setting or within private and public nursing home facilities, were included in the study. Table I compares the demographic data and mean itch and scratch pleasurability of both groups. The prevalence of itch in both groups did not differ significantly. The prevalence of skin xerosis was higher in nursing home patients ($p = 0.023$). As a collective group, the mean ± SD age of male subjects (104) was 72 ± 9 (60–95); while the mean ± SD age of female subjects (198) was 73.5 ± 9.7 (range 60–98).

Prevalence of chronic itch

Seventy-four subjects (25%) complained of chronic itch (Table II), with a mean ± SD age of 73.7 ± 9.6 (60–95). Of the 74 subjects, 49 (66%) were female with a mean ± SD age of 73.2 ± 9.3 (60–90), and 25 (34%) were male, with an mean ± SD age of 74.6 ± 10.1 (60–95).

Itch intensity and scratch pleasure

The itch intensity for the group with itch, using a numerical VAS specific for itch (VAS_{Itch}), demonstrated a mean ± SD score of 6 ± 2.1 (3–10). Subjects with itch on the scalp and arm had significantly higher overall VAS ratings than those with itch on the rest of the body.

Table I. *Demographics and clinical characteristics in nursing home vs outpatients*

Variables	Nursing home ($n = 120$)	Outpatient ($n = 182$)	p-value	Total
Sex, *n* (%)				
Male	35 (29.2)	69 (37.9)	0.11	104 (34.4)
Female	85 (70.8)	113 (62.1)		198 (65.6)
Level of education, *n* (%)				
High school or less	99 (82.5)	154 (84.6)	0.33	253 (83.8)
Some college	1 (0.8)	5 (2.7)		6 (2.0)
College or more	20 (16.7)	23 (12.7)		43 (14.2)
Marital status, *n* (%)				
Married	33 (27.5)	17 (9.3)	<0.001*	50 (16.6)
Xerosis, *n* (%)	45 (37.5)	46 (25.3)	0.02*	91 (30.1)
Presence of chronic itch, *n* (%)	34 (28.3)	40 (22.0)	0.20	74 (24.5)
Comorbidities, *n* (%)				
Any presence:				
Chronic disease	102 (85.0)	150 (82.4)	0.55	252 (83.4)
Diabetes mellitus type 2	36 (30.0)	57 (31.3)	0.80	93 (30.8)
Hypertension	50 (41.7)	102 (56.0)	0.01*	152 (50.3)
Hypothyroidism	11 (9.2)	6 (3.2)	0.09	17 (5.6)
Chronic venous insufficiency	8 (6.7)	8 (4.4)	0.38	16 (5.3)
Parkinson's disease	5 (4.2)	3 (1.6)	0.18	8 (2.6)
Age, years, mean ± SD	79.5 ± 8.2	68.8 ± 7.9	<0.001*	73.1 ± 9.6
Itch characteristics, mean ± SD				
Duration, months	28.0 ± 32.6	50.3 ± 93.0	0.18	40.1 ± 72.3
Itch intensity (VAS)	6.1 ± 2.2	6.0 ± 2.3	0.82	6.0 ± 2.2
Scratching, mean ± SD				
Pleasurability VAS	3.6 ± 2.0	4.5 ± 1.6	0.02*	4.1 ± 1.8

*Significantly different at $p < 0.05$. SD: standard deviation.

Table II. *Demographics and clinical characteristics in itch vs no itch group (*n = *302)*

Variables	Itch (n=74; 25%)	No itch (n=228; 75%)	p-value
Sex, *n* (%)			0.89
Male	25 (33.8)	79 (34.6)	
Female	49 (66.2)	149 (65.4)	
Level of education, *n* (%)			0.56
High school or less	64 (86.5)	189 (82.9)	
Some college	2 (2.7)	4 (1.8)	
College or more	8 (10.8)	35 (15.3)	
Marital status, *n* (%)			
Married	13 (17.6)	37 (16.2)	0.78
Xerosis, *n* (%)	51 (68.9)	40 (17.5)	<0.001*
Comorbidities, *n* (%)			
Any presence:			
Chronic disease	71 (95.9)	181 (79.4)	0.001*
Hypertension	42 (56.8)	110 (48.2)	0.20
Diabetes mellitus type 2	33 (44.6)	60 (26.3)	0.003*
Hypothyroidism	6 (8.1)	11 (4.8)	0.28
Chronic venous insufficiency	9 (12.2)	7 (3.1)	0.002*
Parkinson's disease	0 (0.0)	8 (3.5)	0.10
Age, mean ± SD	73.7 ± 9.7	72.9 ± 9.5	0.44
Range	60–95	60–98	
Itch characteristics			
Duration, months, mean ± SD	40 ± 71		
Intensity (VAS), mean ± SD	6 ± 2.1		
Location, %			
Leg	54		
Back	44		
Scalp	28		
Arm	27		
Temporality, %			
Night	65		
Winter	77		

*Significantly different at $p<0.05$.

Subjects with itch-related (n=21) dermatoses reported a significantly higher VAS than those with no dermatoses. Subjects found that scratching was pleasurable with a mean pleasure rating scale of 4.1 ± 1.8 (–2–5).

Duration

The mean ± SD duration of chronic itch was 40 ± 71 months, (2–420). The majority of patients (55%) had a mean itch duration of between 12 and 36 months, while 20% experienced chronic itch for more than 36 months. The mean ± SD duration of chronic itch reported was higher in females but did not reach statistical significance (p=0.52).

Frequency

The majority of patients with itch reported daily pruritus (88%). While daily itch was more frequent in females (70%) compared with males, this finding did not reach statistical significance (p=0.52).

Location

The most common areas involved were leg (54%), back (44%), scalp (28%), and arm (27%). In 60% of the patients, the involvement was symmetrical. Genital itch was reported in 12% of subjects.

In patients with Type 2 diabetes mellitus (DM), 40% experienced itch in the scalp, in contrast with 17.5% of patients without DM (OR=2.1, 95% CI 1.1–9.5, p=0.037). In patients with CVI, 100% experienced itch in the legs, while only 49% of itchy patients without CVI had itch in the legs (OR=2.0, 95% CI 1.6–2.6, p=0.004).

Temporal pattern

Subjects reported more itch at night (65%), statistically more significant than in the morning (p=0.0001), afternoon (p=0.002), and evening (p=0.0001). Nearly a third (34%) of patients reported associated sleep disturbances. Patients reported a greater susceptibility to itch during winter (77%).

Associated symptoms

The most common symptoms associated with itch were pain (10%), heat sensation (10%), and cold sensation (5%).

Xerosis

Sixty-nine percent of patients with itch presented with xerosis, this contrasts with the 18% of patients without itch who presented with xerosis ($p<0.001$). Of those with itch and xerosis, 67% were female. Although the presence of xerosis tended to correlate with age, this finding did not reach statistical significance (p=0.06).

Dermatoses

Twenty-eight percent of patients had an itch-related dermatosis. The presence of dermatoses correlated with a higher itch intensity (p=0.03). The most common itch-related dermatoses were stasis dermatitis 44%, psoriasis 13%, allergic contact dermatitis 13%, and lichen simplex chronicus 8%.

Correlation of itch with other comorbidities

Of the 74 subjects who reported chronic itch, 71 (96%) had one or more major chronic comorbidities. The presence of comorbidities significantly increased the likelihood of chronic itch (OR=6.1, 95% CI 1.8–20.4, p=0.001). In subjects with no itch, 79% had one or more comorbidities.

Both the presence of DM (OR=2.3, 95% CI 1.3–3.9, p=0.003) and CVI (OR=4.4, 95% CI 1.6–12.2, p=0.002) increased the risk of chronic itch. Thyroid malfunction, hypertension and Parkinson's disease did not correlate with chronic itch. The overall health status, as reported by subjects, was not associated with the presence of chronic itch (p=0.49).

The use of medications known to cause itch, with or without rash (e.g. opioids, amlodipine, allopurinol, etc.), did not differ between those with and without chronic itch (p=1.0, p=0.605, p=1.0, respectively).

DISCUSSION

The current comprehensive study assesses the prevalence, intensity and characteristics of chronic itch in a Hispanic geriatric population. Our study demonstrates a rather high prevalence of chronic itch (25%). Several other studies have reported a point prevalence of itch in geriatric populations, with a distribution ranging from 7% in Nepal up to 37.5% in India (2, 9, 10, 20, 21). The prevalence of chronic itch in this population is similar to that reported in the general population in Germany (7).

We used VASItch, a tool which standardizes itch intensity across different disease types, to objectively assess itch in this population (17). Our mean VAS was rather high (VAS = 6) when compared to other inflammatory skin conditions (8, 22–24). Higher itch intensity has been associated with lower quality of life measures (8, 25).

Skin xerosis is a common complaint in the elderly and is the most common associated sign of chronic itch (26, 27). In our population, 69% of those suffering from chronic itch also suffered from xerosis. More work is needed in order to determine whether the use of prophylactic moisturizers in geriatric patients, especially those in nursing homes, significantly reduces the prevalence of chronic itch and xerosis (4).

The presence of DM highly correlated with itch in this population. The relationship between chronic itch and diabetes has been questioned. While a prior study showed no discernable relationship (28), a recent paper from Japan demonstrated a correlation between diabetic neuropathy and itch (29). The association may also be due to dry skin, a common complaint in diabetics (30). Our findings of a high prevalence of scalp itch in diabetics may suggest that this type of localized itch is correlated with neuropathy.

CVI was also found to highly correlate with chronic itch in our population. This is in conjunction with previous reports (31). We therefore recommend that CVI be added to the list of causes of itch in geriatric populations.

Of note, common health ailments in the geriatric population, such as hypertension, Parkinson's and thyroid disease, did not show any relationship to chronic itch in this study.

Our findings suggest that itch is common at night and causes sleep disturbances in this population. Sleep disturbance is a common complaint in geriatric patients; 57% of adults over 60 report suffering from sleep disturbances (32). Many causes have been attributed to sleep disturbances in geriatric patients (32). However, the role of chronic itch has been poorly recognized (33). Previous studies have reported that chronic itch is exacerbated at night in both inflammatory skin diseases and systemic conditions (4, 34). Given our findings, and the deleterious effects of lack of sleep on quality of life (35), it is important that clinicians assess the effect of itch on sleep in geriatric populations.

We found itch frequency is the highest in the winter. It is well known that dry, cold weather could affect the skin barrier (36, 37). Some of these changes have been related to xerosis in the elderly (38). Thus, exposure to climate changes, especially in the winter, can aggravate chronic itch.

A recent study showed that females have higher itch intensities and a greater desire to scratch, when compared with males (39). Our results show that elderly females tend to have a higher VAS, longer itch duration (in months), and increased frequency of itch, when compared with males. This could be explained, in part, due to the skin differences between males and females (40); and secondarily, to postmenopausal skin changes in females (41). In this cohort, surprisingly no patient suffered from scabies. Scabies is a known common cause of itch in nursing homes (42).

There are several potential limitations to our study. First, due to issues related to limited memory and a high potential for recall bias, we did not assess itch in patients with Alzheimer's or other forms of dementia. It is our opinion that the prevalence, when patients with Alzheimer's and other forms of dementia are included, may actually be higher. Second, as patients were on many medications and records were often not updated, we did not assess all medications. More specifically, we assessed for those medications that are more commonly associated with itch. However, the likelihood of medications causing itch is rather limited due to low numbers of drug-related rash and the lack of opiate use. Third, this study shows an association between chronic itch and geriatric patients, but cannot prove causation. The cross sectional design provides information regarding the prevalence, characteristics and severity of itch in elderly patients at one point in time and may not fully capture the effect of pruritus over a life time. Fourth, review of medical records may not fully capture the scope of comorbidities. Lastly, this study did not account for any treatments administered for specific dermatologic conditions. Unfortunately, we found that most of these dermatological conditions were not addressed.

In conclusion, we report a high prevalence of chronic itch in a Hispanic geriatric population that correlated with significant comorbidities, such as xerosis, DM, and CVI.

ACKNOWLEDGMENTS

We thank Katrina Koenig, Eduardo Lee Johnson Gleason and Dona G. Wiseman for assistance in the translation of the questionnaire.

The authors declare no conflict of interest.

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