

ORIGINAL ARTICLE

Burden of dermatological manifestations across various age groups of a Hilly State in North India

Vivek Kumar Pandey¹, Pradeep Aggarwal², Rakesh Kakkar³, Rashmi Jindal⁴

¹Post Graduate Resident, Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, P.O.-Doiwala, Dehradun-248016; ²Professor, Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, P.O.-Doiwala, Dehradun-248016; ³Professor & Head, Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, P.O.-Doiwala, Dehradun-248016; ⁴Associate Professor, Department of Dermatology, Venereology & Leprosy Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, P.O.-Doiwala, Dehradun-248016.

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures
--------------------------	------------------------------	-----------------------------	-------------------------	----------------------------	----------------------------	--------------------------	----------------------------------

Corresponding Author

Address for Correspondence: Dr Pradeep Aggarwal, Professor, Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, P.O.-Doiwala, Dehradun-248016.

E Mail ID: drpradeep_aggarwal@hotmail.com



Citation

Pandey VK, Aggarwal P, Kakkar R, Jindal R. Burden of dermatological manifestations across various age groups of a Hilly State in North India. Indian J Comm Health. 2017; 29, 4: 396-401.

Source of Funding: Nil **Conflict of Interest:** None declared

Article Cycle

Received: 22/12/2017; **Revision:** 25/12/2017; **Accepted:** 30/12/2017; **Published:** 31/12/2017

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

Abstract

Background: The dermatological condition accounts for an important public health problem of the global load of disease in low and middle-income countries and places significant pressure on primary healthcare centers. There is heterogeneity in the frequency of diverse skin conditions between different areas (1). Most of the knowledge presently available about various aspects of skin diseases is based on observations made and data collected from secondary and tertiary level hospitals (2). Information on community-based prevalence and pattern of skin diseases would be a better measure of burden due to skin diseases in general population in order to assist in the planning of possible intervention strategies (3). **Aims & Objectives:** To find out the prevalence, distribution, and determinants of various dermatological manifestations at the community level in Doiwala block of district Dehradun. **Material & Methods:** This cross-sectional study was conducted over a period of 12 months, the study subjects comprised of individuals of all age groups. A sample size of 834 (416 males & 418 females) was calculated by using current prevalence of skin diseases (43.7% in males & 44.7% in females) in Uttarakhand (1). **Results:** Nearly half of the studied population (45.8%) had some type of dermatological manifestations. It was slightly higher in females (47.1%) than males (44.5%). Out of 382 symptomatic respondents, 247 (64.7) had infective dermatoses followed by 124 (32.5%) non-infective, 6 (1.5%) others and 5 (1.3%) nutritional deficiency dermatoses. The gender-wise distribution of various types of dermatoses was found to be statistically significant (χ^2 -15.225, df-3, p-0.002). **Conclusions:** The prevalence of dermatological conditions in district Dehradun is fairly high with increased prevalence in the younger age group that might be an indicator to the fact that the burden of skin diseases may go to rise in the future.

Keywords

Dermatological; Community; Skin diseases

Introduction

Skin is the largest organ of the human body, covering an area of approximately 2m² and accounting for 16% of adult body weight (4). Due to its exposure to the outside world and involvement in almost all of the systemic diseases, skin diseases is one of the most common health issue (5).

The pattern of dermatoses in a specific area is determined by many factors such as geographical location including environmental and climatic factors, socio-economic situations of the peoples, literacy levels, psychological, cultural and racial factors (6). Up to 80% of the population suffering from skin problems may not seek medical help. Thus, it shows 'iceberg phenomenon' large burden remains hidden due to low concern or priority (7). Information on community-based prevalence and pattern of skin diseases would be a better measure of burden due to skin diseases in general population in order to assist in the planning of possible intervention strategies (8).

In Uttarakhand, a study was done in the hilly area of Garhwal showing 45.3% prevalence of dermatological skin disorders which is consistent with other South Asian prevalence studies (1). In Uttarakhand, skin diseases are a common problem in the community but limited studies have been done to find out the prevalence of skin diseases in community settings

Aims & Objectives

1. To find the prevalence of dermatological manifestations among all age groups at the community level in district Dehradun.
2. To study the distribution of dermatological manifestations in a community setting

Material & Methods

The study was conducted to find out the prevalence, distribution, and determinants of various dermatological manifestations at the community level in Doiwala block of district Dehradun over a period of 12 months, i.e., 1st July 2016 to 30th June 2017. The study subjects comprised of individuals of all age groups. A written informed consent was obtained from every subject participating in the study (in case of children <14 years of age, the ascent was obtained from their parent). Type of Study: Community based-descriptive cross-sectional study. Sample size and sampling methods- The study universe comprised of a population of six Community Developmental Blocks of District

Dehradun. One out of six Community Developmental Blocks i.e. Doiwala block was randomly selected. Doiwala block has five Nyaya Panchayatas, Markham Grant Nyaya Panchayata was again randomly selected. All the villages in Markham Grant Nyaya Panchayata were included in the study.

A sample size of 834 (416 males & 418 females) was calculated by using current prevalence of skin diseases (43.7% in males & 44.7% in females) in Uttarakhand (1), with a margin of error at 5% (standard value of 0.05).

As per census 2011 data, by using percentage of different age groups as per Probability Proportional to Size (PPS) method, sample size was again divided into different age groups i.e. 84 (42 males & 42 females) for under 5, 79 (39 males & 40 females) for 5 to 9 years, 90 (45 males & 45 females) for 10 to 14 years, 511(255 males & 256 females) for 15 to 59 years and 68(34 males & 34 females) for 60 years or above.

The multistage random sampling method was employed and a sample size of 834 study subjects with 7154 Households was covered during the survey and every 8th household was visited as a part of Systematic random sampling. One individual from each selected household was visited.

Selection of Subject:

Inclusion Criteria

- Persons of either sex of any age with or without skin lesion(s).
- Residents of the study area for last one year.

Exclusion Criteria

- Persons not giving consent.
- Individuals with mental illness, physical or developmental disabilities.

Structured study instruments were used to generate data and certain investigations (10% KOH, microscopy for fungus and scabies etc.) were carried out wherever necessary for confirmation of diagnosis.

Before the beginning of the study, orientation training of the investigator was carried out in the Department of Dermatology, Himalayan Institute of Medical Sciences, Jolly Grant, Dehradun, to enable him to diagnose basic dermatological lesions in the community setting.

Investigations related to fungal dermatitis i.e. 10% KOH etc. were carried out either at field laboratory under RHTC, Kurkawala or at a laboratory under Skin Department of Himalayan Institute of Medical Sciences, Dehradun. In a situation where the

diagnosis was doubtful, the opinion of the dermatologist of the institute was taken. In such situations expenses (if any) were borne by the investigator and patients were not charged for the same.

Ethical clearance was obtained from the Institutional Ethics committee prior to the start of the study. Interpretation and analysis of obtained results were carried out using statistical software (e.g. SPSS version 20) by application of descriptive methods of epidemiology in terms of rates, ratios, proportions etc. and using non-parametric (Chi-square) test for significance of the association between socio-demographic variables amongst study group and dermatological manifestations among them.

Results

Out of 834 study subjects, 416(49.9%) were males and 418(50.1%) were females. The respondents were distributed in age groups of <5, 5-9, 10-14, 15-59 and 60 years or above. Majority of the respondents in the study were in the age group 15-59 years (61.2%), followed by 10.8% of respondents in 10-14 years age group, 10.1% in below 5 years age group, 9.5% in 5-9 years age group and 8.4% in 60 or above years age group. The pattern was almost same for both males and females ([Table-1](#)).

The mean age of the respondents in years was 29.82 ± 18.56 years (1 year to 80 years), in males, it was 30.63 ± 18.74 years and 29.01 ± 18.35 years for females.

Nearly half of the studied population (45.8%) had some type of dermatological manifestations. It was slightly higher in females (47.1%) than males (44.5%) ([Table-2](#)).

Out of 382 symptomatic respondents, 247(64.7%) had infective dermatoses followed by 124(32.5%) non-infective, 6(1.5%) others and 5(1.3%) nutritional deficiency dermatoses. Among 185 symptomatic males, 135(73.0%) had infective dermatological disorders followed by 43(23.2%) non-infective, 4(2.2%) nutritional deficiency dermatological disorders and 3(1.6%) other dermatological disorders. Among 197 symptomatic females, 112(56.9%) had infective dermatological disorders followed by 81(41.1%) non-infective, 3(1.5%) other dermatological disorders and 1(0.5%) nutritional deficiency dermatological disorders. This gender-wise distribution of various types of dermatoses was found to be statistically significant ($\chi^2=15.225$, df-3, p-0.002) ([Table-3](#)).

Out of 28 symptomatic respondents in under five years age group, three fourth 21 (75.0%) had infective dermatoses and rest one fourth had non-infective dermatoses. Out of 37 symptomatic respondents in 5-9 years age group, majority 24(64.9%) had infective dermatoses followed by 10(27.0%) non-infective dermatoses, 2(5.4%) nutritional deficiency dermatoses and 1(2.7%) other dermatoses. Out of 47 symptomatic respondents in 10-14 years age group, more than half 26(55.3%) had infective dermatoses followed by 19(40.4%) non-infective dermatoses and 2(4.3%) nutritional deficiency dermatoses. Out of 234 symptomatic respondents in 15-59 years age group, more than two-third 164(70.1%) had infective dermatoses followed by nearly one fourth 65(27.8%) non-infective dermatoses, 4(1.7%) other dermatoses and 1(0.4%) nutritional deficiency dermatoses. Out of 36 symptomatic subjects in geriatrics age group, more than two-third 23(69.9%) had non-infective dermatoses followed by one third 12(33.3%) infective dermatoses and 1(2.8%) other dermatoses. Age-wise distribution of various types of dermatoses was found to be statistically highly significant ($\chi^2=33.827$, df-12, p-0.001) ([Table-4](#)).

Discussion

Dermatological manifestations in the community as a research problem has been largely undermined in developing nations like India. Not enough research has been done on skin diseases at the community level, as opposed to communicable diseases which constitute a major cause of morbidity and mortality in such countries. Hence, the present study aims to address this research gap by focusing on the prevalence and distribution as well as determinants of skin diseases at the community level in district Dehradun.

As there is a paucity of community-based studies on skin diseases, therefore the hospital-based studies have been taken up for comparison of findings and as an indirect indicator of the community-based skin disease pattern.

Socio-demographic details of all the members of the household were recorded. All the study participants were interviewed irrespective of dermatological manifestations.

In our study the individuals of all age groups, i.e. <5 years, 5-9 years, 10-14 years, 15-59 years, and 60 years or above whether having any type of visible skin lesion(s) or not were interviewed till the desired

sample size was achieved. These age group categories are similar to other studies viz. Grills *et al.*, in rural mountainous north India (1), Bilal K *et al.*, in rural Erbil, Iraq (9) and Karn D *et al.*, in Nepal (5).

The mean age of respondents in our study was 29.82 ± 18.56 years (1 to 80 years) which is similar to studies conducted by Hassan I *et al.*, in Kashmir (6), Juno JJ *et al.*, in Mangalore (7) and Shrestha DP *et al.* in Nepal (10).

In the present study, the prevalence of dermatological manifestations was found to be 45.8%. The findings are comparable to a study conducted by Grills *et al.*, in Garhwal region of Uttarakhand who found the community-based prevalence of dermatological conditions to be 45.3% (1). The prevalence of skin diseases was found to be 47.6% in a Sri Lankan suburban population (11), 62% in a study of Nepali villages in the plain areas (12). However, a study conducted by Bilal K *et al.* (9) in a village called "Henara" in Erbil Governorate, Kurdistan region, Iraq shows that the overall prevalence of skin diseases was 36.3% that is lower than our community-based prevalence of skin diseases.

In the present study, a total of 382 respondents have self-reported one or any other form of skin disease. Out of these 44.5% were males and 47.1% were females. This shows the preponderance of females as compared to males in skin diseases.

Similar findings of female preponderance have been reported in the hospital-based studies conducted by various researchers viz. Juno JJ *et al.* (52%), in rural India (7), Memon KN *et al.* (58.4%) in Pakistan (13), Kuruvilla M *et al.*, (56.36%) in Dakshina Kannada (14), Yusuf AK *et al.* (53.6%), in Bangladesh (15) also supported the dominance of females in the skin diseases.

Moreover, Atraide DD *et al.* (16), hospital-based study in Nigeria have also revealed female dominance i.e. 60.9% of females reported skin diseases while only 39.1% males reported the same. Raddadi AA *et al.* (17), at King Khalid National Guard hospital in Saudi Arabia, Symvoulakis EK *et al.* (18), at Mediterranean Island, El-Khateeb EA *et al.* (19), in Egypt, these researchers around the globe have also reported female dominance in their findings.

However, few other published studies conducted in this regard. viz. Rao GS *et al.* (20), in their village-based study have reported the preponderance of males in skin diseases as 63.41% compared to 36.59% females. Khan WA *et al.* (21), in Bombay, Al

Shobaili HA in Saudi Arabia (22) and Kathem K *et al.* (23), in Iraq have also revealed male dominance in their study.

In the present study, the highest proportion of skin diseases (28.0%) were reported in the subjects of 15-59 years of age. Symvoulakis EK *et al.* (18), reported it is highest (38%) in 21-40 years of age.

It was followed by the children from birth to 14 years with 13.3% and geriatrics 60 years or above with a percentage of 4.3%. In a study by Memon KN *et al.*, (13) on the pattern of skin diseases in patients visiting a tertiary care health facility at Pakistan reported that 82.5% of the patients visiting the health service facility are children below 10 years of age.

Moreover, Karthikeyan K *et al.* (24), the study also revealed that 30% of all the outpatient visit to dermatologist involve children (<14 years of age).

Atraide DD *et al.* (16), in their study on the pattern of skin disorders in a Nigerian tertiary hospital, revealed that more than three-quarter of total cases were occurred above 16 years of age, while one quarter only belongs to below 16 years of age.

Since above studies are hospital-based and usually parents are more concerned about children regarding their morbidities in this age group, so such cases are more reported in hospitals while at community level minor dermatological manifestations in adults remain unreported. In the present study, we found that infective type of skin diseases was 64.7% and non-infective type was 32.5%.

It is refuted by Rao GS *et al.* (20), reported in a study on the pattern of skin diseases in an Indian village where major cause of skin diseases was non-infectious dermatoses which were 57.07% compared to 43.40% of skin diseases of infectious origin.

In contrast to our community-based study, Asokan N *et al.* (25), in their study on pattern of skin diseases among patients attending a tertiary care teaching hospital in Kerala, reported the proportion of infective skin diseases (35.19%) as compared to non-infective skin diseases (64.81%). Similarly, Bijayanti *et al.* (26), in Imphal, Jaiswal AK *et al.* (27) in Kashmir, Nair PS *et al.* (28), in Trivandrum, had also reported higher noninfective etiology of skin diseases in their hospital-based research studies. Moreover, Atraide DD *et al.* (18), have also reported in their retrospective four-year data analysis of hospital patients attending dermatological clinic found the infective type of skin disorders (23.8%). Lastly, a

study by Kuruvilla M *et al.* (14) conducted in Dakshina Kannada, also supports the dominance of non-infective type compared to the infective type of skin disorders.

Conclusion

It can be concluded from our study that the prevalence of dermatological conditions in district Dehradun is fairly high. Its increasing prevalence in the younger age group is a pointer to the fact that the burden of skin diseases is going to rise in the near future. Therefore, it is pertinent to recommend effective and sound measures for prevention of dermatological conditions in the given community

Authors Contribution

All authors have contributed equally in this study.

References

- Grills N, Grills C, Spelman T, Stoope M, Hellard M, El-Hayek C, Singh R. Prevalence survey of dermatological conditions in mountainous north India. *International journal of dermatology*. 2012;51(5):579-87.
- Hassan I, Anwar P, Bilquis S, Nabi S, Rasool F, Munshi I. Hassan I, Anwar P, Bilquis S, Nabi S, Rasool F, Munshi I. Comparison of dermatoses seen in community health camps and a tertiary care centre in Kashmir. *Indian J Dermatol Venereol Leprol*. 2014 May-Jun;80(3):214-20. doi: 10.4103/0378-6323.132248. PubMed PMID: 24823398. [PubMed].
- Shrestha S, Lama L, Gurung D, Shrestha DP, Roshdahl I. Pattern of skin diseases in a rural village development community of Nepal. *NJDVL*. 2014;12(1):41-44.
- Hiroshi S. Structure and function of skin. Shimizu's textbook of dermatology. [Japan]: Hokkaido University; 2007.
- Karn D, Khatri R, Timalina M. Prevalence of Skin Diseases in Kavre District, Nepal. *Nepal Journal of Dermatology, Venereology & Leprology*. 2012;9(1).
- Hassan I, Anwar P, Bilquis S, Nabi S, Rasool F, Munshi I. Comparison of dermatoses seen in community health camps and a tertiary care centre in Kashmir. *Indian J Dermatol Venereol Leprol*. 2014 May-Jun;80(3):214-20. doi: 10.4103/0378-6323.132248. PubMed PMID: 24823398. [PubMed].
- Juno J. Joel, Neethu Jose, Shastry C.S. Patterns of skin disease and prescribing trends in rural India. *Sch. Acad. J. Pharm*. 2013; 2(4): 304-09.
- Shrestha S, Lama L, Gurung D, Shrestha DP, Roshdahl I. Pattern of skin diseases in a rural village development community of Nepal. *NJDVL*. 2014;12(1):41-44.
- Bilal K, Ali M. Prevalence of skin diseases in rural Erbil: A community-based study. *Zanco J Med Sci*. 2012;16(1).
- Shrestha DP, Gurung D, Rosdahl I. Prevalence of skin diseases and impact on quality of life in hilly region of Nepal. *Institute of Medicine Journal*. 2012;34(3):44-9.
- Perera A, Atukorale DN, Sivayogan S, Ariyaratne VS, Karunaratne LA. Prevalence of skin diseases in suburban Sri Lanka. *Ceylon Med J*. 2000 Sep;45(3):123-8. PubMed PMID: 11192992. [PubMed].
- Walker SL, Shah M, Hubbard VG, Pradhan HM, Ghimire M. Skin disease is common in rural Nepal: results of a point prevalence study. *Br J Dermatol*. 2008 Feb;158(2):334-8. Epub 2007 Aug 17. PubMed PMID: 17711533. [PubMed].
- Memon KN, Soomro RA, Ansari MS. Pattern of skin diseases in patients visiting a tertiary care health facility at Hyderabad, Pakistan. *J Ayub Med Coll Abbottabad*. 2011 Oct-Dec;23(4):37-9. PubMed PMID: 23472408. [PubMed].
- Kuruvilla M, Sridhar KS, Kumar P, Rao GS. Pattern of skin diseases in Bantwal Taluq, Dakshina Kannada. *Indian J Dermatol Venereol Leprol*. 2000 Sep-Oct;66(5):247-8. PubMed PMID: 20877090. [PubMed].
- Yousuf AK, Joarder Y, Aktar A, Hoq MN, Rahman M, Akter F, Begum H, Akhtar MR, Rahman AS. Pattern of skin diseases in patients attended OPD of Dermatology and Venereology in a tertiary care teaching hospital in Bangladesh. *Bangladesh Journal of Physiology and Pharmacology*. 2014;29(1-2):8-11.
- Atraide DD, Akpa MR, George IO. The pattern of skin disorders in a Nigerian tertiary hospital. *J Public Health Epidemiol*. 2011;3:177-81.
- Raddadi AA, Abdullah SA, Damanhour ZB. Pattern of skin diseases at king Khalid National Guard hospital: A 12 month prospective study. *Ann Saudi Med*. 1999;19:453-4.
- Symvoulakis EK, Krasagakis K, Komninos ID, Kastrinakis I, Lyronis I, Philalithis A, Tosca AD. Primary care and pattern of skin diseases in a Mediterranean island. *BMC Fam Pract*. 2006 Jan 31;7:6. PubMed PMID: 16448566; PubMed Central PMCID: PMC1402299. [PubMed].
- El-Khateeb EA, Imam AA, Sallam MA. Pattern of skin diseases in Cairo, Egypt. *Int J Dermatol*. 2011 Jul;50(7):844-53. doi: 10.1111/j.1365-4632.2010.04840.x. PubMed PMID: 21699521. [PubMed].
- Rao GS, Kumar SS, Sandhya. Pattern of skin diseases in an Indian village. *Indian J Med Sci*. 2003 Mar;57(3):108-10. PubMed PMID: 14514260. [PubMed].
- Khan WA, Valand AG. Pattern of Non-infectious vesiculobullous and vesiculo pustular skin diseases in a large tertiary care hospital. *Bombay Hosp J*. 2010;52:172-6.
- Al Shobaili HA. The pattern of skin diseases in the Qassim region of Saudi Arabia: What the primary care physician should know. *Ann Saudi Med*. 2010 Nov-Dec;30(6):448-53. doi: 10.4103/0256-4947.72263. PubMed PMID: 21060156; PubMed Central PMCID: PMC2994160. [PubMed].
- Kathem K, Rubiy A. Dermato-epidemiology: A household survey among two urban areas in Basrah city, Iraq. *Int J Dermatol*. 2005;44:641-5.
- Karthikeyan K, Thappa DM, Jeevankumar B. Pattern of Paediatric dermatoses in a referral center in South India. *Indian Paediatr*. 2004;41:373-7.
- Asokan N, Prathap P, Ajithkumar K, Ambooken B, Binesh VG, George S. Pattern of skin diseases among patients attending a tertiary care teaching hospital in Kerala. *Indian J Dermatol Leprol*. 2009;75:517-8.
- Th. Bijayanti Devi, Zamzachin G. Pattern of skin diseases in Imphal. *Indian J Dermatol*. 2006;51:149-50.
- Jaiswal AK, Singh G. Pattern of skin diseases in Kashmir region of India. *Indian J Dermatol Venereol Leprol*. 1999 Nov-Dec;65(6):258-60. PubMed PMID: 20921679. [PubMed].

28. Nair PS, Nair TG. Pattern of dermatological diseases in Trivandrum. Indian J Dermatol Venereol Leprol. 1999 Nov-Dec;65(6):261-3. PubMed PMID: 20921680. [PubMed].

Tables

TABLE 1 AGE AND GENDER-WISE DISTRIBUTION OF RESPONDENTS IN THE STUDY AREA

Age group in years	Male (N=416)		Female (N=418)		Total (N=834)	
	n	%	n	%	n	%
<5	42	10.1	42	10.0	84	10.1
5-9	39	9.4	40	9.6	79	9.5
10-14	45	10.8	45	10.8	90	10.8
15-59	255	61.3	256	61.2	511	61.2
60 or above	35	8.4	35	8.4	70	8.4
Total	416	100	418	100	834	100

TABLE 2 GENDER-WISE DISTRIBUTION OF DERMATOSES AMONG RESPONDENTS IN THE STUDY POPULATION

Variable	Male (N=416)		Female (N=418)		Total (N=834)	
	n	%	n	%	n	%
Dermatoses						
Present	185	44.5	197	47.1	382	45.8
Absent	231	55.5	221	52.9	452	54.2

TABLE 3 GENDER-WISE DISTRIBUTION OF VARIOUS TYPES OF DERMATOSES IN SYMPTOMATIC RESPONDENTS IN THE STUDY POPULATION

Type of Dermatoses	Males (N=185)		Females (N=197)		Total (N=382)	
	n	%	n	%	n	%
Infective	135	73.0	112	56.9	247	64.7
Non-infective	43	23.2	81	41.1	124	32.5
Nutritional deficiency	4	2.2	1	0.5	5	1.3
Others (insect bites, keloids)	3	1.6	3	1.5	6	1.5
Total	185	100	197	100	382	100
χ^2 -15.225, df-3, p-0.002						

TABLE 4 AGE-WISE DISTRIBUTION OF VARIOUS TYPES OF DERMATOSES IN SYMPTOMATIC RESPONDENTS IN THE STUDY POPULATION

Type of dermatoses	Age group in years									
	<5 (N=28)		5-9 (N=37)		10-14 (N=47)		15-59 (N=234)		60 & above (N=36)	
	n	%	n	%	n	%	n	%	n	%
Infective	21	75.0	24	64.9	26	55.3	164	70.1	12	33.3
Non-infective	7	25.0	10	27.0	19	40.4	65	27.8	23	63.9
Nutritional deficiency	0	0.0	2	5.4	2	4.3	1	0.4	0	0.0
Others	0	0.0	1	2.7	0	0.0	4	1.7	1	2.8
χ^2 -33.827, df-12, p-0.001										