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Association of Sociodemographic with Epidemiological Profile of Chronic Wound Patients attending a Tertiary Care Hospital

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ABSTRACT

Background & Objective: Chronic wounds have a significant impact on the health of patients and their families, causing pain, loss of function and mobility, depression, distress and anxiety, embarrassment and social isolation, financial burden, prolonged hospital stay and chronic morbidity or even death. This study aims to trace the socio-demographic and the association with epidemiology of chronic wound. **Methods:** A hospital-based cross-sectional study design was conducted among chronic wound patients between 20 to 76 years old from a tertiary care centre during July 2023 to March 2024.A pre-tested structured schedule was used for data collection. Categorical variables were presented as frequencies and percentages. Bivariate analysis involved the use of the Chi-square test for assessing the significance associations between socio-demographic with epidemiology of chronic wound patients. **Results:** A total of 240 patients with chronic wound were included in the study. The mean age (±SD) for the enrolled patients was (48.8 ± 11.8) years. The majority of respondents were male (86.3%), Hindu (92.5%), and from nuclear families (81.7%).Employment status varied, with 5% unemployed, 12.5% daily-wagers, and 28.7% engaged in government or private services. Type of family and occupation were found significantly associated with the infected wound while age-group, occupation, and body mass index found significant associated with history of amputation. **Conclusions:** The study revealed a varied socio-demographic profile among chronic wound patients. This study updates the understanding of chronic wound epidemiology in eastern Uttar Pradesh, highlighting the need for tailored wound care strategies based on demographic profiles. Addressing these factors can potentially optimize treatment outcomes.

Keywords: Epidemiological profile, chronic wound, socio-demographic, cross-sectional

Introduction

Wounds, particularly those which are chronic, are a matter of concern for patients and health professionals alike.[1] Chronic wounds are those that do not reduce in size by 20-40% after 2-4 weeks of appropriate treatment. Chronicity may be evaluated when there is no complete healing after 6 weeks or if there is a poor response to a treatment adjustment [2].

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The Wound Healing Society classifies chronic wounds into four main categories based on their causative etiologies: pressure ulcers, diabetic ulcers, venous ulcers, and arterial insufficiency ulcers[3]. Globally, chronic wounds affect an estimated between 1.51 to 2.21 per 1000 population, a figure expected to rise with aging populations worldwide.[4] In developing countries like India, the prevalence rates for chronic wounds and overall wounds was approximately 4.5 and 15.03 per 1000 of the general population, respectively.[5] In recent years, the incidence of chronic wounds has been growing like a 'silent epidemic'[6], due to the ageing population and the concurrent increase in co-morbidities and lifestyle diseases such as diabetes, obesity, venous hypertension and peripheral vascular diseases.[7] Chronic wounds have a significant impact on the health and quality of life of patients and their families, causing pain, loss of function and mobility, depression, distress and anxiety, embarrassment and social isolation, financial burden, prolonged hospital stays and chronic morbidity or even death.[8] Health professionals and society in general are not fully aware of the indirect complications and socioeconomic burden of chronic wounds.[9] There is a lack of comprehensive research and data on the epidemiology and sociodemographic burden of chronic wounds in India. The novelty of this study lies in its focus on Eastern Uttar Pradesh, characterized by distinct socio-cultural dynamics and healthcare challenges. By exploring the duration of chronic wound, wound infection, and history of amputation. The findings of this study are expected to significantly contribute to the existing body of knowledge on chronic wound epidemiology, particularly in underrepresented regions like Eastern Uttar Pradesh. By elucidating the socio-demographic determinants of chronic wounds and their implications for healthcare delivery, this research findings to empower healthcare providers and policymakers to implement effective, contextually appropriate interventions. Ultimately, addressing these factors holds the potential to mitigate the burden of chronic wounds and improve overall health outcomes in Eastern Uttar Pradesh, India. This study aims to fill this gap by investigating a diverse range of demographic variables including age, gender, education, occupation, and socio-economic status, and their associations with epidemiological characteristics of chronic wound.

Material and Methods

Study Area: The study was conducted at the OPD of General Surgery, Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Eastern Uttar Pradesh, a tertiary care hospital covering the population of eastern UP, western Bihar, MP, Chhattisgarh, Jharkhand.

Study Design and Number of Participants: This hospital-based cross-sectional study took place from July 2023 to March 2024. A pre-tested structured schedule was used for data collection via face-to-face interviews. The study employed a complete enumeration method. Participants of this study are those who fulfilled the definition, irrespective of gender with chronic wounds either new or recurrence. Here chronic wound is defined as, all the patients who had more than 6 weeks of wounds been including in this study.

Inclusion & Exclusion Criteria: The chronic wound patients in the aged equal or greater than 20 years irrespective of gender are included. The Patients without wound or with a wound that less than 6 weeks, were excluded.

Study Variables: Dependent variables were chronic wounds duration, wound infection, and history of amputation. Independent variables encompassed age, gender, religion, current place of residence, family type, education, caste, occupation, marital status, body mass index, and socio-economic status.

Statistical Analysis: Data were entered into MS Excel 2019 and analyzed using SPSS 28.0. Categorical variables were presented as frequencies and percentages. Associations were assessed using Fisher's Exact Probability Test or χ^2 test as appropriate, with statistical significance set at $P < 0.05$ at two-sided test.

Ethical Clearance: The study received approval from the Institutional Ethics Committee of Institute of Medical Sciences, Banaras Hindu University, Varanasi (Letter no.: Dean/2023/EC/6165 dated: 28/07/2023).

Results

A total of 240 cases of chronic wounds patients has been enrolled for this study. The data was collected from July 2023 to March 2024. The majority of respondents were male (86.3%), Hindu (92.5%), and from nuclear families (81.7%). The mean age (±SD) of the subjects was 48.80 years (±11.8), with 61.3% falling in the age group of 40-60 years. A significant portion of respondents (62.9%) resided in rural areas, and most (86.7%) were literate. Married individuals constituted 94.6% of the cohort. Employment status varied, with 5% unemployed, 12.5% daily-wagers, and 28.7% engaged in government or private services (Table 1).

Table-1: Socio-demographic characteristics of chronic wound patients from Eastern Uttar Pradesh.

Variables	Categories	No.	%
Age	20-40	59	24.6
	40-60	147	61.3
	≥ 60	34	14.2
Gender	Male	207	86.3
	Female	33	13.8
Religion	Hindu	222	92.5
	Muslim	18	7.5
Place of Residence	Rural	151	62.9
	Urban	89	37.1
Type of Family	Nuclear	196	81.7
	Joint	44	18.3
Education	Illiterate	32	13.3
	Primary/Middle	49	20.4
	10th/12th	89	37.1
	UG/PG	70	29.2
Caste	General	80	33.3
	OBC	131	54.6
	SC/ST	29	12.1
Occupation	Unemployed	12	5.0
	Home maker	30	12.5
	Farmer	33	13.8
	Daily-wager	30	12.5
	Gov./Private Services	69	28.7
	Business	66	27.5
Marital Status	Married	227	94.6
	Others	13	5.4
Body Mass Index	Under weight	22	9.2
	Normal weight	92	38.3
	Over weight	52	21.7
	Obese	74	30.8
Socioeconomic Status	Upper Class	8	3.3
	Upper middle class	48	20
	Middle class	43	17.9
	Lower middle class	89	37.1
	Lower class	52	21.7

Table-2: Association of sociodemographic variables with chronic wound duration (in months) among the respondents

Variable		Chronic Wound Duration (in months)									
		<3		3 to 6		6 to 12		12 to 60		≥ 60	
		No.	%	No.	%	No.	%	No.	%	No.	%
Age Group	20-40	21	35.6	7	11.9	9	15.3	19	32.2	3	5.1
	40-60	56	38.1	30	20.4	12	8.2	41	27.9	8	5.4
	≥ 60	22	64.7	2	5.9	2	5.9	7	20.6	1	2.9
$\chi2 = 10.169$; P=0.038											
Gender	Male	79	38.2	33	15.9	21	10.1	64	31.0	10	4.8
	Female	20	60.6	6	18.2	2	6.1	3	9.1	2	6.1
$\chi2 = 13.957$; P=0.083											
Place of Residence	Rural	90	40.5	39	17.6	21	9.5	60	27.0	12	5.4
	Urban	9	50.0	0	0	2	11.1	7	38.9	0	0
$\chi2 = 9.902$; P=0.059											
Place of Residence	Rural	59	39.1	25	16.5	17	11.3	46	30.5	4	2.6
	Urban	40	44.9	14	15.7	6	6.7	21	23.7	8	9.0
$\chi2 = 7.014$; P=0.135											
Type of Family	Nuclear	84	42.9	31	15.8	20	10.2	51	26.0	10	5.1
	Joint	15	34.1	8	18.2	3	6.8	16	36.4	2	4.5
$\chi2 = 2.598$; P=0.627											
Education	Illiterate	20	62.5	2	6.3	2	6.3	7	21.9	1	3.1
	Primary/Middle	15	30.6	7	14.3	8	16.3	16	32.7	3	6.1
	10th/12th	39	43.8	15	16.9	6	6.7	27	30.4	2	2.2
	UG/PG	25	35.7	15	21.4	7	10.0	17	24.3	6	8.6
$\chi2 = 17.037$; P=0.148											
Caste	General	38	47.4	11	13.8	9	11.3	19	23.7	3	3.8
	OBC	56	42.8	23	17.6	8	6.1	37	28.2	7	5.3
	SC/ST	5	17.2	5	17.2	6	20.8	11	37.9	2	6.9
$\chi2 = 13.337$; P=0.101											
Occupation	Unemployed	6	50.0	0	0	2	16.7	3	25.0	1	8.3
	Home maker	19	63.3	5	16.7	2	6.7	3	10.0	1	3.3
	Farmer	19	57.6	3	9.1	1	3.0	10	30.3	0	0
	Daily-wager	8	26.7	3	10.0	3	10.0	16	53.3	0	0
	Gov./Private	27	39.2	18	26.1	5	7.2	15	21.7	4	5.8
	Business	20	30.3	10	15.2	10	15.2	20	30.3	6	9.0
$\chi2 = 43.564$; P=0.002											
Marital Status	Married	96	42.2	36	15.9	22	9.7	61	26.9	12	5.3
	Others	3	23.1	3	23.1	1	7.7	6	46.1	0	0
$\chi2 = 4.423$; P=0.352											
Body Mass Index	Under weight	9	40.9	3	13.6	3	13.6	6	27.4	1	4.5
	Normal weight	45	48.9	21	22.8	5	5.4	19	20.7	2	2.2
	Over weight	21	40.4	9	17.3	4	7.7	18	34.6	0	0
	Obese	24	32.4	6	8.1	11	14.9	24	32.4	9	12.2
$\chi2 = 28.791$; P=0.004											
Socio-economic Status	Upper Class	1	12.5	0	0	1	12.5	6	75.0	0	0
	Upper middle class	14	29.2	5	10.4	7	14.6	19	39.5	3	6.3
	Middle class	21	48.8	4	9.3	4	9.3	12	27.9	2	4.7
	Lower middle class	36	40.5	19	21.3	7	7.9	23	25.8	4	4.5
	Lower class	27	51.8	11	21.2	4	7.7	7	13.5	3	5.8
$\chi2 = 27.334$; P=0.038											

The present study results were observed significant associations ($p<0.05$) between chronic wound duration with gender, occupation, body mass index, and socioeconomic status. Female proportion (60.6%) was higher as compared to male proportion (38.2%) in chronic wound duration <3 months while when duration of chronic wound was increases then

male proportion (30.9%) was found higher as compared to female proportion (9.1%) between duration of 12 months to 60 months. Homemaker proportion (63.3%) was found highest and lowest proportion was (26.7%) found in daily wager in <3 months duration of chronic wound when chronic wound duration was increases in 12 months to 60 months, we observed that highest proportion (53.3%) was found in daily wager and lowest proportion (10%) is found in home maker (Table 2).

Table-3: Association of sociodemographic variables with state of chronic wound duration infection among the respondents.

Chronic Wound Infection					
Variable		**Yes**		**No**	
		No.	**%**	**No.**	**%**
Age Group	20-40	32	54.2	27	45.8
	40-60	76	51.7	71	48.3
	≥ 60	19	55.9	15	44.1
$\chi 2 = 0.249$; P=0.883					
Gender	Male	107	51.7	100	48.3
	Female	20	60.6	13	39.4
$\chi 2 = 0.908$; P=0.341					
Religion	Hindu	120	54.1	102	45.9
	Muslim	7	38.9	11	61.1
$\chi 2 = 1.537$; P= 0.215					
Place of Residence	Rural	75	49.7	76	50.3
	Urban	52	58.4	37	41.6
$\chi 2 = 1.724$; P=0.189					
Type of Family	Nuclear	111	56.6	85	43.4
	Joint	16	36.4	28	63.6
$\chi 2 = 5.925$; P= 0.015					
Education	Illiterate	17	53.1	15	46.9
	Primary/Middle	20	40.8	29	59.2
	$10^{th}/12^{th}$	53	59.6	36	40.4
	UG/PG	37	52.9	33	47.1
$\chi 2 = 4.452$; P=0.217					
Caste	General	44	55.0	36	45.0
	OBC	68	51.9	63	48.1
	SC/ST	15	51.7	14	48.3
$\chi 2 = 12.51$; P=0.028					
Occupation	Unemployed	4	33.3	8	66.7
	Home maker	21	70.0	9	30.0
	Farmer	19	57.6	14	42.4
	Daily-wager	15	50.0	15	50.0
	Gov./Private Services	42	60.9	27	39.1
	Business	26	39.4	40	60.6
$\chi 2 = 0.825$; P=0.354					
Marital Status	Married	118	52.0	109	48.0
	Others	9	69.2	4	30.0
$\chi 2 = 0.825$; P=0.354					
Body Mass Index	Under weight	10	45.5	12	54.5
	Normal weight	52	56.5	40	43.5
	Over weight	30	57.7	22	42.3
	Obese	35	47.3	39	52.7
$\chi 2 = 2.385$; P=0.496					
Socio-economic Status	Upper Class	3	37.5	5	62.5
	Upper middle class	24	50.0	24	50.0
	Middle class	18	41.9	25	58.1
	Lower middle class	49	55.1	40	44.9
	Lower class	33	63.5	19	36.5
$\chi 2 = 5.561$; P=0.234					

The present study results were observed significant associations ($p<0.05$) between status of infection with type of family and occupation. 56.6% wound infection present in nuclear family while 36.4% wound infection observes in the joint family. In occupation, highest proportion is observed in home maker (70.0%) followed by the Gov./ Private Services (60.9%), farmer (57.6%), daily wager (50.0%), business (39.4%), and unemployed (33.3%) (Table 3).

Table-4: Association of sociodemographic variables with history of amputation among the respondents.

History of Amputation					
Variable		**Yes**		**No**	
		No.	**%**	**No.**	**%**
Age Group	20-40	5	8.5	54	91.5
	40-60	7	4.8	140	95.2
	≥ 60	6	17.6	28	82.4
$\chi2$ =6.715 ; P=0.035					
Gender	Male	16	7.7	191	92.3
	Female	2	6.1	31	93.9
$\chi2$ =0.121 ; P=0.728					
Religion	Hindu	15	6.8	207	93.2
	Muslim	3	16.7	15	83.3
$\chi2$ =1.843 ; P=0.175					
Place of Residence	Rural	12	7.9	139	92.1
	Urban	6	6.7	83	93.3
$\chi2$ =0.117 ; P=0.732					
Type of Family	Nuclear	13	6.6	183	93.4
	Joint	5	11.4	39	88.6
$\chi2$ =1.159 ; P=0.282					
Education	Illiterate	4	12.5	28	87.5
	Primary/Middle	3	6.1	46	93.9
	$10^{th}/12^{th}$	9	10.1	80	89.9
	UG/PG	2	2.9	68	97.1
$\chi2$ =4.713 ; P=0.194					
Caste	General	4	5.0	76	95.0
	OBC	11	8.4	120	91.6
	SC/ST	3	10.3	26	89.7
$\chi2$ = 1.262 ; P= 0.532					
Occupation	Unemployed	4	33.3	8	66.7
	Home maker	2	6.7	28	93.3
	Farmer	4	12.1	29	87.9
	Daily-wager	2	6.7	28	93.3
	Gov./Private Services	3	4.3	66	95.7
	Business	3	4.5	63	95.5
$\chi2$ =9.732 ; P= 0.013					
Marital Status	Married	18	7.9	209	92.1
	Others	0	0	13	100.0
$\chi2$ =2.086 ; P=0.149					
Body Mass Index	Under weight	5	22.7	17	77.3
	Normal weight	10	10.9	82	89.1
	Over weight	1	1.9	51	98.1
	Obese	2	2.7	72	97.3
$\chi2$ =12.555 ; P=0.005					
Socio-economic Status	Upper Class	0	0	8	100.0
	Upper middle class	2	4.2	46	95.8
	Middle class	7	16.3	36	83.7
	Lower middle class	7	7.9	82	92.1
	Lower class	2	3.8	50	96.2
$\chi2$ =7.043 ; P=0.134					

History of amputation is observed in lowest in the age-group (40-60 years) is 4.8% while highest proportion is observed in the age-group (≥60 years) is 17.6%. Overweight patients are observed in lowest proportion (1.9%) and highest proportion (22.7%) is observed in the underweight patients (Table 4).

The distribution of chronic wound duration indicates that the majority of chronic wounds are identified within the first three months of onset (Figure 1). Additionally, wound infection affects over half of the patients, with a proportion of 52.92%. The history of amputation is observed in 7.50% of the patient population, underscoring its relatively lower but still significant presence (Figure 2 & 3).

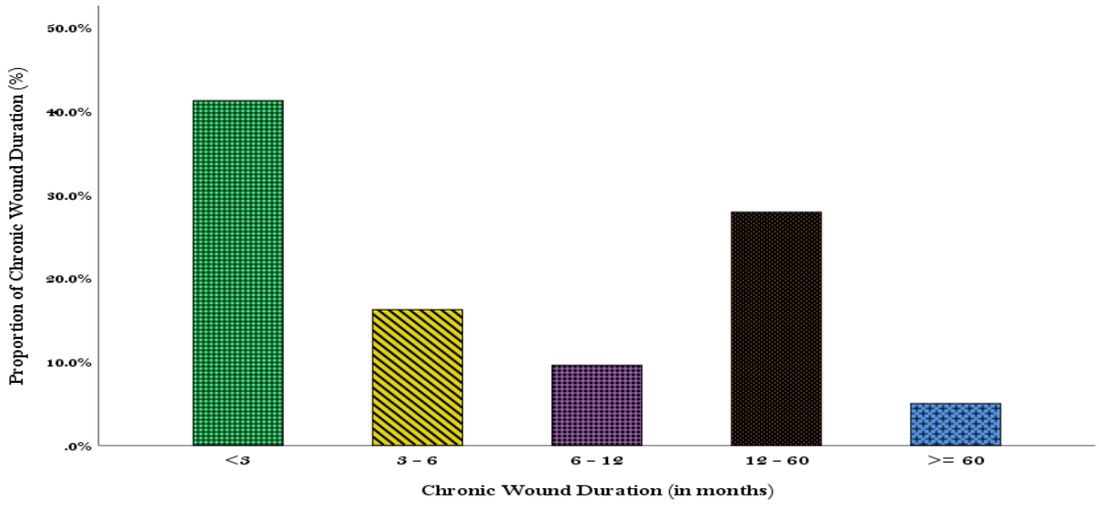


Figure-2: Wound infection status of chronic wound patients (in months).

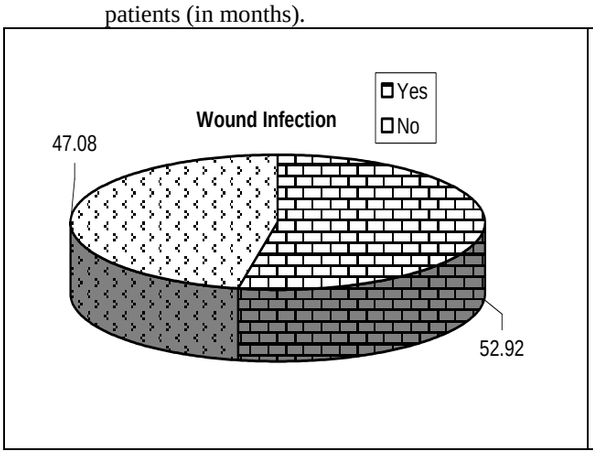
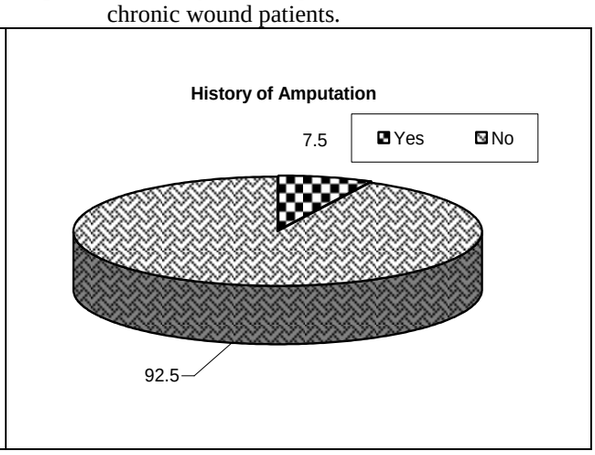


Figure-3: History of amputation characteristics of chronic wound patients.



Discussion

Regarding its contributions, the data from this study will make it possible for policy makers, healthcare providers, professionals to direct actions for the reality of the life and the health conditions of each patient. These data are relevant for the decision-making process of the health team, especially considering the nurse, who is a protagonist in the health care to patients with chronic wounds.[10] In our study, we observed that the highest proportion (61.3%) of patients found in the age-group (40-60 years) and lowest proportion (14.2%) was observed in the age-group (≥60 years), higher

education proportion (29.2%) of observed in the study while lowest proportion (13.3%) was found in the illiterate, and proportion of farmer was found 13.8%. Another same study conducted in Brazil, highest proportion (50.2%) was observed in the age-group (>60 years) and lowest proportion (18.6%) was observed in the age-group (20-40 years), highest proportion (37.2%) was found in the illiterate while lowest proportion (4.7%) was found in the higher education, and proportion of farmer was in this study found 27.9%.[11] This dissimilarity may occur due to geographical setting, sample size, duration of data collection, and data collection tools. In our study, majority of the patients were married (94.6%) and most participants were married is in accordance to the results of a research carried out in individuals with vasculogenic ulcers, which found that 50.0% of their participants were married in another study. [12] It stands out that many elders with leg ulcers depend on others to carry out their daily activities and to exchange their wound dressings, which offers married individuals the safety and the support to care for themselves. [13] Obesity is a health condition that requires special attention, as it directly interferes in the healing of the wound, and the multi-professional team must be involved.[10] The nutritional state of the individual should be assessed, and an intervention should be carried out through a dietary planning that can attend to the needs of the patient, since the fact that they are obese does not mean that they are adequately nourished, not to mention that there is a chance that their glycaemic levels would become elevated, which also makes the healing process more difficult**.** [14] Regarding how long it takes for the wound to heal, chronic wound does not progress normally towards a cure, and their healing may be impaired by the presence of underlying conditions.[15] Diabetes is one of the underlying diseases that lead to long-lasting lesions that can even progress into amputation. Understanding the socio-demographic and clinical epidemiology of chronic wounds is crucial for tailoring effective healthcare interventions. Our findings suggest the need for targeted educational campaigns and accessible healthcare services, particularly in rural areas where chronic wound proportion is high and access to specialized care may be limited.

Conclusion

In conclusion, this study provides valuable insights into the socio-demographic factors influencing chronic wounds in Eastern Uttar Pradesh, highlighting the complex interplay of age, gender, occupation, body mass index, and socio-economic status. Addressing these factors through targeted healthcare interventions is essential for improving outcomes and reducing the burden of chronic wounds in the region.

Declaration by Authors

Ethical Approval: Approved

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Conflict of Interest: The authors declare no conflict of interest.

References

1. Gupta S, Sagar S, Maheshwari G, Kisaka T, Tripathi S. Chronic wounds: Magnitude, socioeconomic burden and consequences. Wounds Asia. 2021; 4 (1):8-14**.**

2. Leaper DJ, Durani P. Topical antimicrobial therapy of chronic wounds healing by secondary intention using iodine products. International Wound Journal. 2008 May; 5 (2):361-8.

3. The Wound Healing Society. Chronic wound care guidelines. 2006. http://woundheal.org/ documents/ final_pocket_guide_treatment.aspx. Accessed 20 Nov 2015.

4. Martinengo L, Olsson M, Bajpai R, et al. Prevalence of chronic wounds in the general population: systematic review and meta-analysis of observational studies. Ann Epidemiol. 2019;29:8-15
5. Gupta N, Gupta SK, Shukla VK, Singh SP. An Indian community-based epidemiological study of wounds. Journal of wound care. 2004 Sep; 13 (8):323-5.
6. Järbrink K, Ni G, Sönnergren H, Schmidtchen A, Pang C, Bajpai R, Car J. Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review. Systematic reviews. 2016 Dec;5:1-6.
7. Šitum M, Kolić M, Redžepi G, Antolić S (2014) [Chronic wounds as a public health problem] [Article in Croatian]. Acta Med Croatica 68(Suppl 1) :5–7.
8. MacDonald J. Global initiative for wound and lymphoedema care (GIWLC). Journal of Lymphoedema. 2009 Dec; 4 (2):92-5.
9. Macdonald JM, Geyer MJ, World Health Organization. Wound and lymphoedema management. World Health Organization; 2010.
10. Mamede Vasconcelos Cavalcante V, Gurgel Alexandre S, Araújo da Silva FA, Cavalcante dos Santos Santiago J, de Mendonça Figueirêdo Coelho M, Moreira Alves Avelino B, Andrade da Costa F. Socioeconomic and clinical-epidemiological profile of people attended in an outpatient clinic for complex wounds. Rev Rene. 2020 Jan 1; 21(1).
11. Crônicas AE. Sociodemographic, Clinical and Therapeutic Profile of Patients with Chronic and acute wounds.
12. Araujo SN, Nogueira LT, Figueiredo MD, Andrade EM, Santiago RF, Silva AB, Cardoso FD. Socio-demographic and clinical characterization of patients with vasculogenic ulcers. Biosci. J. (Online). 2017:1362-70.
13. Tavares AP, Sá SP, de Oliveira BG, Sousa AI. Quality of life of elderly patients with leg ulcers. Escola Anna Nery. 2017 Oct 19; 21:e20170134.
14. Chakravartty S, Vivian G, Mullholland N, Shaikh H, McGrath J, Sidhu PS, Jaffer O, Patel AG. Preoperative liver shrinking diet for bariatric surgery may impact wound healing: a randomized controlled trial. Surgery for Obesity and Related Diseases. 2019 Jan 1; 15 (1):117-25.
15. Russell D, Atkin L, Betts A, Dowsett C, Fatoye F, Gardner S, Green J, Manu C, McKenzie T, Meally H, Mitchell L. Using a modified Delphi methodology to gain consensus on the use of dressings in chronic wounds management. Journal of wound care. 2018 Mar 2; 27 (3):156-65.

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