

Survey on Prevalence and Impact of Chronic Non-Healing Wounds among Patients Attending Various Wound Clinics Around Trivandrum City

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ABSTRACT

The survey on prevailing medical practices for non-healing chronic wounds and its impact provides valuable insights into the management and treatment strategies adopted in the context of chronic wound care. The discussion highlights key findings related to diabetes as a prevalent cause, wound location, treatment approaches, and the utilization of serological tests. Diabetes emerged as a significant risk factor for chronic wounds, with 90% of the respondents having a family history of diabetes, and 70% currently under medication for diabetes management. These findings emphasize the crucial role of diabetes in contributing to non-healing chronic wounds. Healthcare providers should prioritize diabetic patients for preventive wound care measures and regular assessments to reduce the incidence of chronic wounds. The survey reveals that a substantial proportion of chronic wounds (75%) are diabetes-related, further supporting the link between diabetes and wound development. Infection-related wounds (10%), autoimmune-related wounds (3%), and other causes (5%) also contribute to the overall burden of chronic wounds. Understanding the various causative factors allows healthcare professionals to tailor treatment plans accordingly and address the

specific needs of individual patients. The location of wounds showed a gender disparity, with a higher prevalence of chronic wounds in male limbs (74%) compared to female limbs (26%). Similarly, chronic wounds in other sites were more common in males (74%) than females (26%). The reasons for these gender-based differences warrant further investigation and consideration in treatment planning. In terms of treatment and management, nearly all respondents (100%) were on multiple antibiotics for wound care, indicating the widespread use of antimicrobial therapy. Additionally, a significant portion of respondents (57%) reported trying alternative treatment approaches, suggesting the need for a more diverse and holistic approach to chronic wound management. Hospitalization for chronic wound care was common, with 80% of the respondents having been hospitalized multiple times. This suggests that chronic wounds often require extensive medical attention and resources, making the management of chronic wounds a challenging and resource-intensive aspect of healthcare. The utilization of wound-related serological tests was relatively low, with only 3% of respondents undergoing such tests. This indicates a potential gap in healthcare practices, as serological tests can provide valuable diagnostic information for guiding

wound management strategies. Increased awareness and promotion of serological tests among healthcare providers could lead to better wound care outcomes. Overall, the survey findings underscore the complexities and challenges associated with non-healing chronic wounds, especially in the context of diabetes-related wounds. The study highlights the need for comprehensive and personalized wound management strategies, increased awareness about wound-related serological tests, and the exploration of alternative treatment approaches to improve the outcomes and quality of life for individuals affected by chronic wounds. Addressing these challenges would lead to better wound healing outcomes, reduced healthcare burdens, and enhanced overall patient well-being

Key Words: Non-healing chronic wounds, Wounds Prevalence, Antimicrobial therapy, Alternative treatment approaches, Serological tests.

INTRODUCTION

For hundreds of years in wound care chronic non healing wounds often impose significant burden to the healthcare system. It is the most commonly reported etiology in those individuals admitted under general surgery department ^[1]. For the treatment and its management, it required multiple weeks of hospital stay. In most cases the endpoint becomes a surgical procedure. A large number of people are affected by non healing chronic wounds.

There available no genuine data on the prevalence of non healing chronic wounds for different settings and categories. Such information is essential for policy and planning purposes as the increasing number of elderly and the prevalence of lifestyle diseases point in the direction of an increased burden. Knowledge about the prevalence and incidence of chronic wounds in relation to population characteristics is important for informing healthcare planning and resource allocation.

Body's response to any form of injury is term wound healing. Wound healing has various phases and are presented as separate events, though these events do occur in conjunction to one another and there is a significant degree of temporal overlap. Extreme importance is on the underlying process and the outcome status with surgical applications. Each and every tissue in the human body undergoes a process of repair when it sustains injury amongst which is the bone which has a unique ability to heal without scar formation

CLINICAL IMPLICATIONS

Atraumatic handling in an important factor that leads to decreased necrotic tissue at wound surface.

- Avoiding intervening fat layer or removing excess fat is necessary as its devoid of collagen and does not hold the wound together.
- The best way to avoid dead space is the use of suction drainage as— compared to any foreign material like suturing.
- Under normal circumstances, epithelialization of an incision is usually complete within 24 to 48 hours and it may be left unprotected after that and contact with water is permissible. This helps in the psychological improvement of the patient and well being as well and the gentle debridement of debris occurs this way.
- Taking a shower aids in bacterial decontamination as they are washed away. This decreases inflammation and prevents breakdown of early formed fragile epithelial layer over incision, thus improving the quality of the scar.

Wounds are a stress to the patient as there is a delay in wound healing which cause medical, surgical and psychological stress to the patient. Wounds occur due to more factors than one. They are multifactorial and have medical. Surgical or dermatological causes and due to the increasing incidence of diabetes, arterial disease, neoplasia causing morbidity ^[3].

Wounds are classified as acute or chronic. Wounds less than eight weeks duration are termed acute. They have not yet completed the natural healing cycle. Chronic wounds are those that have failed to proceed through an orderly and timely process that produces anatomic and functional integrity. Chronic wounds either do not heal at all or require a prolonged time for healing [4].

Removal of debris and control of infection forms the backbone of the process of wound healing which is a highly orchestrated process. Inflammation clears the area for new blood vessel growth to occur to increase the blood flow to the wound. Following this, the wound heals through deposition of granulation tissue and wound contraction and maturation. Any failure or derangement in any one of these steps prevents the wound from healing[5]. Other factors such as diabetes mellitus, vascular disease, pressure, trauma, venous insufficiency and prolonged immobilisation will delay the wound from healing well due to the chronicity of the illness.

Adequate debridements of necrotic tissue, moisture in the tissue bed and avoidance or control of infection form the basis of conventional treatment of wounds. These common elements of wound care are combined with treatment modalities specific to the wound and the general condition of the patient and his co-morbidities. Where the wound is being treated and how it is being treated plays a role in outcome.

Initial thorough surgical debridement thereby removing all devitalised tissue and necrotic tissue forms the basis of standard wound management, followed by either a wet-to moist gauze dressings, which need to be changed at least twice a day may be used to cover the wound [6]. Relatively inexpensive, easily available and easy to use are the advantages of this method

There are various requirements for rapid and proper healing of a wound that is open.

Healing by “primary intention” - The edges of the wound must be allowed to seal back together

Healing by “secondary intention”- Granulation tissue must form to fill the wound bed.

Secondly, the wound must stay moist because the new epidermal cells can only travel across moist surfaces.

Thirdly, bacterial infection of the wound must be prevented by not allowing contaminants to reach the surface of the wound.

Fourth, any excess fluids that if present must be removed from the wound surface while appropriate moisture is maintained.

Last but not the least, contributing factors to wound occurrence should be minimized, if elimination is not possible. This a major element that needs to be addressed as bedridden patients may be needing special support surfaces; protein caloric malnutrition and vitamin deficiencies should be adequately corrected and drugs known to impede wound healing should be dosed in appropriate manner.

Contamination and colonization of wounds that do not invade the surface is almost always seen in most wounds. The “critical colonization” concept has been introduced in the recent years in order to convey that bacterial growth may actually play a role in the delayed healing of wound even in the absence of the traditional criteria necessary for infection. Reducing the volume and density of bacterial load by the use of normal saline and use of occlusive dressing or the application of topical antibiotics/ antiseptics help hasten the healing of the wound.

Chronic wound infections have multiple bacterial contaminants, Staphylococcus aureus being the most common culprit. Biofilm production by the bacteria both helps in its survival as well as delays wound healing as it prevents entry of the antibiotic as well as drugs into the wound area. Leukocyte malfunction, tissue hypoxia and acting as a physical barrier is done by the bacterial colonization that causes a delay wound healing [7].

Expenditures related to time duration and population of people with wounds is higher

in India. The statistics with regards to the same in South India is well documented as population surveys show that up to 21% of adults who are greater than 40 years of age have diabetes. Diabetic foot infections account for almost 10% of the total Indian hospital admissions. An Indian patient with a diabetic foot ulcer on an average, if requiring surgical intervention will spend almost up to 32.3% of his/ her income on medical care. Recent advances in wound care will help the Indian population as amputations in view of diabetes are 8-9% more compared to developed countries.

Standard treatment for all established wounds incorporates common principles employed in the management of all wound types. These include the removal of necrotic tissue through aggressive debridement that is achieved through debridement using sharp instruments, autolytic debridement by endogenous enzymes which are present in commercially available wound care products and proper moisture balance achieved through the selection of the proper wound dressing. For most of the chronic and acute wounds, saline-moistened cotton gauze has been the standard treatment of choice.

Therefore, wet-to-moist conventional gauze dressings require close maintenance and excess dedicated nursing time. Moreover, the removal of a wet-to moist dressing that has been allowed to dry may in fact injure the wound again.

- This procedure in fact also causes considerable pain, impedes the healing process and increases the risk of infection.
- Gauze dressings may appear much less expensive per dressing when compared to the modern synthetic dressings but the conspicuous increase in the labour costs and ancillary supplies such as gloves used and the bio hazardous waste disposal substantially increase the total cost of conventional dressing.

METHODOLOGY

STUDY SUBJECTS: 300 patients who attending various wound clinics were selected for this study. The patients were evaluated with routine blood investigations such as complete blood count and biochemical investigations.

MATERIALS AND METHODS

1.1 STUDY TYPE

Face-to-face survey method using preprepared questionnaire

1.2 STUDY SITE

Various wound care clinics around Trivandrum City.

1.3 STUDY PERIOD

For a period of 6 months

1.4 SELECTION CRITERIA

INCLUSION CRITERIA:

1. Patients above the age of 40 years.
2. Patients with non healing wounds

EXCLUSION CRITERIA:

1. Patients less than age of 40 years.
2. Pregnant patients
3. Psychiatric disorder patients.
4. Patients with HIV and Tuberculosis.
5. Patients on radiotherapy and chemotherapy.

4.5 SOURCES OF DATA

1. Leading wound clinics and hospitals in Trivandrum.

4.6 DATA ANALYSIS

- a. Descriptive Statistics
- b. Charts and Graphs
- c. Data Interpretation

OBSERVATION AND RESULTS

5.1 AGE & GENDER WISE DISTRIBUTION AMONG THE STUDY POPULATION.

Gender	Above 60 years		Between 40- 60 years	
	Nos	%	Nos	%
Male	155	74%	66	74%
Female	55	26%	24	26%

The majority of respondents were above 60 years old (70%), with the remaining falling in the age group of 40 to 60 years (30%). The gender distribution was skewed towards males (74%) compared to females (26%).

The majority belonged to the self-employed category (90%).

5.2 EMPLOYMENT WISE DISTRIBUTION AMONG THE STUDY POPULATION

Unemployed	Employed
90%	10%

The majority of respondents were unemployed (90%), most of them are into agricultural related activities, the remaining were employed (10%).

5.3 DISTRIBUTION OF STUDY POPOPULATION BASED ON INCOME

Lower income	Higher income
90%	10%

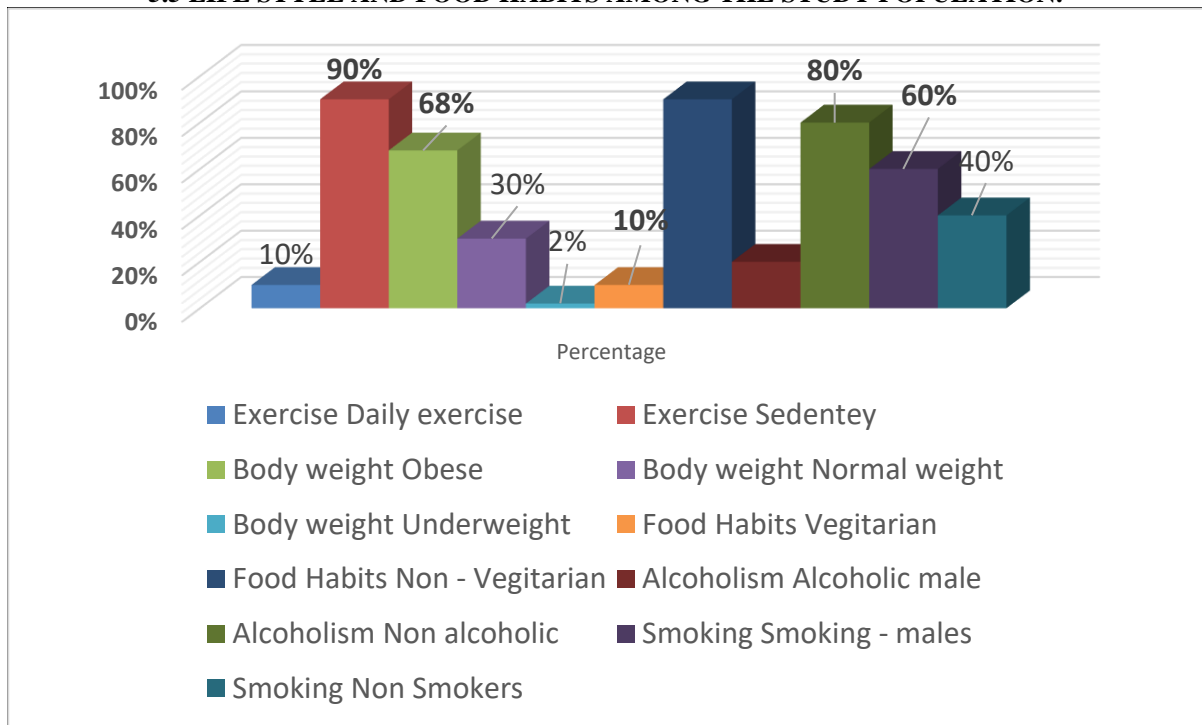
90% of the study population falls into the low-income category. The remaining 10% of the study population belongs to the high-income group.

5.4 SOCIAL HISTORY AMONG THE STUDY POPULATION

Type	Number	Percentage
Joint Family	9	3%
Nuclear Family	291	97%
Residence Urban	90	30%
Residence Rural	210	70%

The data highlights the social history such as family type and area of residence; major respondents are from the rural area.

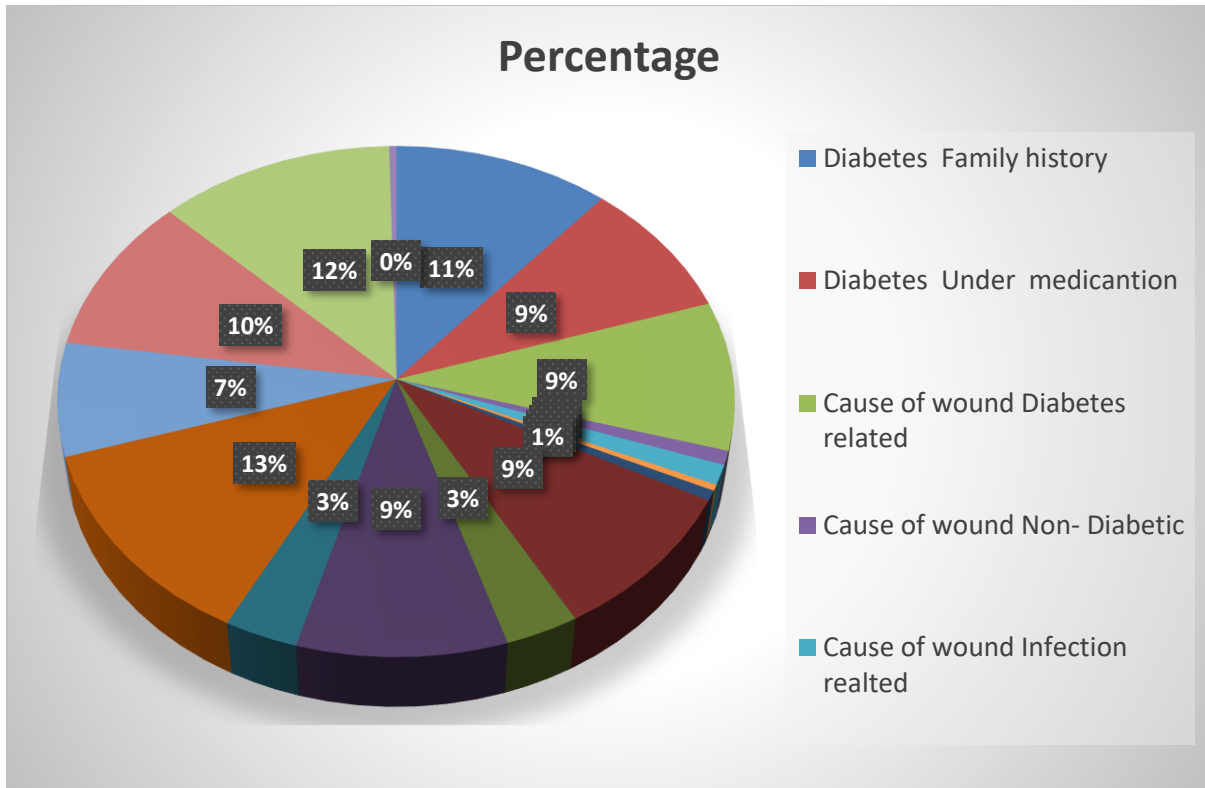
5.5 LIFE STYLE AND FOOD HABITS AMONG THE STUDY POPULATION.



Heading	Type	Number	Percentage
Exercise	Daily exercise	30	10%
	Sedentary	270	90%
Body weight	Obese	204	68%
	Normal weight	90	30%
	Underweight	6	2%
Food Habits	Vegetarian	270	10%
	Non - Vegetarian	30	90%
Alcoholism	Alcoholic male	60	20%
	Non alcoholic	240	80%
Smoking	Smoking - males	180	60%
	Non Smokers	120	40%

Majority of the respondents are leading a sedentary life style & are Obese with non-vegetarian food habits. Among the population 20% males found to be alcoholic and 60% found to be smokers.

5.6 PATTERN OF DIFFERENT CLINICAL ASPECT AMONG STUDY POPULATION



	Type	Number	Percentage
Diabetes	Family history	270	90%
	Under medication	210	70%
Cause of wound	Diabetes related	225	75%
	Non- Diabetic	21	7%
	Infection related	30	10%
	Autoimmune	9	3%
	Others	15	5%
Location of Wound	Limbs -Male	188	74%
	Limbs -Female	66	26%
	Other site - male	34	74%
	Other site - Female	12	26%
Treatment & Management	On Multiple antibiotics	300	100%
	Alternative treatment	171	57%
	Hospitalised Multiple times	240	80%
	Visited Multiple times in OPD for wound dressing	294	98%
	Underwent any wound related serological tests	1	3%

DISCUSSION

Non-healing chronic wounds pose significant challenges to both patients and healthcare providers. These persistent wounds often result from various underlying conditions, such as diabetes, vascular diseases, or immunosuppression, making

them complex and difficult to manage. One major challenge is the increased risk of infection, leading to prolonged hospital stays and antibiotic resistance concerns. Chronic wounds can severely impact the quality of life for affected individuals, causing pain, restricted mobility, and

emotional distress. Moreover, the financial burden of long-term wound care and multiple hospital visits can be overwhelming for patients.^[8] Healthcare professionals face the challenge of devising personalized treatment plans, as each chronic wound case may require a unique approach. Furthermore, the lack of awareness among some patients about wound care and preventive measures contributes to delayed healing. Addressing these challenges demands a holistic and interdisciplinary approach, involving patient education, advanced wound management techniques, and continuous research to improve outcomes and alleviate the burden of non-healing chronic wounds.

The survey on the prevailing medical practice regarding non-healing chronic wounds healing and its impact provides valuable insights into the demographic distribution of patients in different age groups and genders. The data indicates that a substantial proportion of the study population falls within the age range of above 60 years, constituting 74% of males and 26% of females. Similarly, in the age group between 40-60 years, males represent 74%, and females represent 26%.

The higher representation of males in both age groups suggests that they are more affected by non-healing chronic wounds compared to females. This gender disparity may be attributed to various factors, including lifestyle habits, occupational exposures, and hormonal differences, which could influence wound healing outcomes.

Understanding the demographic distribution of patients with non-healing chronic wounds is crucial for tailoring medical practices and interventions to address specific needs and challenges. With a significant proportion of the study population being above 60 years old, there may be a higher prevalence of age-related health conditions, such as diabetes and circulatory issues, contributing to the incidence of chronic wounds. Additionally, healthcare providers should be attentive to gender-specific aspects of wound care to ensure the most effective

treatment and promote better healing outcomes.

The impact of non-healing chronic wounds on patients' lives cannot be underestimated. These wounds often lead to decreased mobility, chronic pain, and psychological distress, affecting the overall quality of life for affected individuals. Proper medical practices and wound management strategies are essential in preventing complications, minimizing hospitalization rates, and facilitating successful healing.^[10] By understanding the demographic distribution and tailoring medical practices accordingly, healthcare professionals can improve patient outcomes, reduce the burden of chronic wounds, and enhance the overall well-being of individuals affected by non-healing chronic wounds.

The data reveals a significant disparity in the prevalence of chronic wounds between the unemployed and employed individuals.

The findings show that 90% of the study population who were unemployed have non-healing chronic wounds, while only 10% of the employed individuals reported having such wounds. This stark contrast raises several important questions and highlights potential challenges in wound healing related to employment status.

One possible explanation for the higher prevalence of chronic wounds among the unemployed population could be reduced access to healthcare and wound management resources. Unemployed individuals may face financial constraints, limiting their ability to seek timely medical attention or afford necessary wound treatments. Moreover, the stress and emotional burden associated with unemployment may also impact wound healing negatively, as stress can hinder the body's natural healing processes.

On the other hand, the lower prevalence of chronic wounds among the employed population could be linked to better access to healthcare services and financial stability. Employed individuals may have health insurance coverage or employee benefits that facilitate wound care and management.

Additionally, the routine structure and social support associated with employment may contribute to better overall well-being and, consequently, improved wound healing.

The impact of non-healing chronic wounds on the unemployed population could be severe, exacerbating their existing financial challenges and affecting their ability to find employment. Chronic wounds may hinder mobility and limit physical activities, reducing the potential for employment opportunities.^[9] Consequently, this cycle of chronic wounds and unemployment could lead to a decreased quality of life and increased dependency on social assistance programs.

In contrast, for the employed individuals dealing with non-healing chronic wounds, the impact may primarily manifest as productivity loss and increased medical leave or absences. Managing chronic wounds while maintaining work commitments can be physically and emotionally taxing, affecting job performance and overall job satisfaction.

The survey findings underscore the importance of addressing the specific needs and challenges faced by individuals with non-healing chronic wounds, especially among the unemployed population. Tailored wound care plans, increased access to healthcare services, and awareness programs could significantly improve outcomes and reduce the burden of chronic wounds, particularly among those who are unemployed.

CONCLUSIONS

In conclusion, this survey sheds light on the connection between employment status and the prevalence of non-healing chronic wounds. Understanding these dynamics can guide healthcare providers and policymakers in developing targeted interventions to address the unique challenges faced by individuals with chronic wounds, ultimately aiming for better wound healing outcomes and improved quality of life.

The survey results indicate a significant disparity in prevailing medical practices for non-healing chronic wounds between lower and higher income groups, with 90% of the respondents falling into the lower income category. This suggests that individuals with limited financial resources might have reduced access to advanced wound care and specialized treatments. The impact of this disparity could lead to delayed healing and potentially worsened outcomes for the lower-income group compared to their higher-income counterparts.

The survey results provide valuable insights into the prevailing medical practices and their impact on non-healing chronic wounds. The data reveals that the majority of the study population belongs to nuclear families (97%) and resides in rural areas (70%). These demographic factors can influence access to healthcare services and wound management options.

The prevalence of nuclear families might affect the availability of support and caregiving for individuals with chronic wounds. In contrast, the higher percentage of rural residents could potentially limit access to specialized wound care facilities, leading to delayed healing and increased wound complications.

Understanding the impact of residence and family type on wound healing is crucial for tailoring medical interventions and providing targeted healthcare services to those in need. Healthcare providers should be aware of the unique challenges faced by patients in rural areas and nuclear families when designing treatment plans and wound management strategies.

The findings of this survey underscore the importance of holistic and patient-centered approaches to managing non-healing chronic wounds. It emphasizes the need for improved access to wound care facilities in rural areas and the development of support networks for individuals in nuclear families. By addressing these factors, healthcare professionals can enhance the overall care and outcomes for patients with chronic

wounds and ultimately reduce the burden of non-healing wounds in the population.

The survey on the prevailing medical practice for non-healing chronic wounds and its impact reveals important insights into various health and lifestyle factors that can influence wound healing outcomes. The study population consists of individuals with chronic wounds, and the data reflects their exercise habits, body weight, food preferences, alcohol consumption, and smoking status.

The survey indicates that a significant majority (90%) of the participants lead a sedentary lifestyle, which could potentially impede wound healing. Daily exercise, reported by only 10% of the respondents, has been associated with better overall health and improved wound healing. These findings highlight the importance of promoting regular physical activity to enhance wound healing outcomes in this population.

Obesity is prevalent in 68% of the study population, and it is a known risk factor for delayed wound healing. Maintaining a healthy body weight is crucial for optimal wound healing, and healthcare providers should emphasize weight management strategies to improve healing in obese individuals.

The data also reveals that a majority of the participants follow a non-vegetarian diet (90%). Diet plays a vital role in wound healing, and individuals with chronic wounds may benefit from dietary interventions that include adequate protein, vitamins, and minerals to support the healing process. Addressing the nutritional needs of non-vegetarian individuals could be beneficial in optimizing wound healing.

Alcohol consumption is reported by 20% of male respondents, and smoking is prevalent among 60% of male participants. Both alcoholism and smoking are well-known factors that negatively impact wound healing. These habits can impair blood flow, reduce tissue oxygenation, and weaken the immune response, all of which can hinder the wound healing process. Healthcare

providers must address these lifestyle factors to improve wound healing outcomes in affected individuals.

The impact of these health and lifestyle factors on wound healing cannot be overlooked. Non-healing chronic wounds can lead to prolonged hospital stays, increased risk of infection, and decreased quality of life for patients. Moreover, the financial burden of wound care and management can be substantial, especially for individuals with chronic wounds. Addressing the challenges of non-healing chronic wounds requires a comprehensive and patient-centered approach that includes lifestyle modifications, advanced wound management techniques, and patient education on wound care and preventive measures.

In conclusion, the survey highlights the need for targeted interventions to address the challenges posed by non-healing chronic wounds. By recognizing the impact of exercise habits, body weight, dietary preferences, alcohol consumption, and smoking on wound healing, healthcare providers can develop personalized treatment plans to optimize healing outcomes for individuals with chronic wounds. Moreover, public health efforts should focus on promoting healthy lifestyle choices to prevent chronic wounds and improve the overall well-being of the population.

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valuable diagnostic information for guiding wound management strategies. Increased awareness and promotion of serological tests among healthcare providers could lead to better wound care outcomes.

Overall, the survey findings underscore the complexities and challenges associated with non-healing chronic wounds, especially in the context of diabetes-related wounds. The study highlights the need for comprehensive and personalized wound management strategies, increased awareness about wound-related serological tests, and the exploration of alternative treatment approaches to improve the outcomes and quality of life for individuals affected by chronic wounds. Addressing these challenges would lead to better wound healing outcomes, reduced healthcare burdens, and enhanced overall patient well-being.

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