

**A STUDY ON THE PHARMACOLOGICAL AND NONPHARMACOLOGICAL
REMEDIES ON BURN WOUND INJURY ON THE LEVEL OF AWARENESS OF
RESIDENTS OF BACOR CITY CAVITE, PHILIPPINES*****Cipres, Angeline A., Dela Vega, Kaithleen Joy E.**

Department of Pharmacy, St. Dominic College of Asia, Emilio Aguinaldo Hwy, Bacoor, 4102 Cavite, Philippines.

***Corresponding Author: Cipres, Angeline A.**

Department of Pharmacy, St. Dominic College of Asia, Emilio Aguinaldo Hwy, Bacoor, 4102 Cavite, Philippines.

Article Received on 11/03/2024

Article Revised on 31/03/2024

Article Accepted on 21/04/2024

ABSTRACT

Burn-related injuries are born disproportionately by the world's poor to low-income countries and have claimed the lives of people in Southeast Asia countries. Due to the resulting medical, economic, and social consequences, burn injuries are life-changing catastrophes that affect entire families and communities. The study aims to evaluate the people's knowledge and awareness regarding burn injury amongst the residents of Bacoor, Cavite to assess the impact of knowing first aid, demonstrating the usefulness of basic first aid in treatment. It utilized a descriptive adapted questionnaire with a total of 400 respondents through online questionnaire. The respondents showed to be knowledgeable towards the level of awareness on the non-pharmacological remedies however they showed negatively on pharmacological remedies resulting in them being indecisive when encountering with burn wound injury leading to self-medication and potentially worsening the burn injury. The study confirmed the need for an effective educational program for the people of Bacoor City, Cavite to enhance their awareness regarding first aid for burn injuries, which will indirectly increase the success and provision of ideal treatment for burn patients.

KEYWORDS: Burn, Burn Wounds, Pharmacological and Non-Pharmacological Remedies, First Aid.**INTRODUCTION**

Burns induce tissue damage due to intense heat, electrical energy, radioactivity, and acidic substances, which can ruin the protein that makes up our exposed cells' surface. Burns disrupt human equilibrium, allowing microbial invasion, infection, body fluid loss, and thermoregulation. (Tortora, et.al, 1996). Burns is one of the top causes of death worldwide, although they are only a tiny part of a much broader public health problem. Many people are living with permanent disabilities and spectacle due to burns which usually results in poverty and social isolation.

According to the World Health Organization, burns and burn-related injuries remain significant public health issues. There are 11 million new burns per year and over 30,000 new cases of burns that are serious enough to need medical attention. Burn injuries claimed the lives of an estimated 180,000 people in Southeast Asian countries. Southeast Asia is also thought to be responsible for half of the global burden of fire-related burns. Due to the resulting medical, economic, and social consequences, burn injuries. In the Philippines, very few studies on burn injuries have been published. Most burn damage research has focused on electrical burns and bacterial infections in burn wounds. A late study of

Abesamis in 2019 at tertiary institutions in the Philippines examined the bacteriological profile of burns that grew in wounds. Moreover, a similar study surveyed electrical burn cases admitted in general hospitals (Acosta et al., 2006).

Electrical burns frequently end in death and amputation, generating problems that affect life and employment, as detailed in the study. In addition, it appears that the injuries are brought on by mistreatment, play, curiosity, or a lack of knowledge. These people frequently suffer injuries due to breaking laws and regulations, failing to pay attention in the workplace, a lack of safety education, and a lack of electrical understanding or experience in electricity and electrical equipment. With everything put in mind, the study aims to evaluate the people's knowledge and awareness regarding burn injury among the residents of Bacoor, Cavite. The study also aims to assess the impact of knowing first aid, demonstrating the usefulness of basic first aid in treatment.

METHODOLOGY**Research Design**

The study utilized a descriptive research design. There was no experimentation as the respondents' knowledge

would only be assessed as the data gathering occurred. Survey questionnaires were used to assess the respondents' knowledge of burn injuries.

Instrumentation

The study utilized an adapted questionnaire from the study of Mortada et. al. (2020). The questionnaire is divided into three sections that long to answer the following: The demographic profile of the respondents, burn injury-related questions, and their source of information regarding first aid for burn injuries.

Research Population

The study used a table from the study of Israel (n.d.) to determine sample size, indicating a total of 400 sample size (n) for a greater than 100,000 population group given the fact that the confidence level is 95% and p=5, with an error of ±5%.

Research Procedure

The researchers prepared an online questionnaire using Google forms, and were given to a total of 400 respondents. The sample size of 400 respondents was determined by a table that was published for sample size determination in the study of Israel (n.d.). The researchers was snowball sampling in distributing the questionnaires online. Each researcher were sent a link to a known respondent residing in Bacoor, Cavite, and was asked to forward the questionnaire link to their acquaintances within the city. The researchers then analyzed the data gathered from the questionnaire and subjected it to statistical analysis.

Data Analysis

The gathered data from the online questionnaires were subjected to the following statistical analysis:

Frequency

Frequency was used in this study as the absolute number of responses was significant in determining the mean and percentage of the responses.

Mean

Tabulation of the raw data would then proceed to statistical analysis, such as getting the mean of the responses to interpret the data systematically.

Percentage

The percentage of the frequencies would serve as the proportional representation of each response taken from the respondents.

DISCUSSION OF RESULTS

The numbers below correspond with the results answering the statement of the problem to assess the awareness of people who are residing in Bacoor, Cavite, regarding burn injury.

The demographic profile of the respondents, particularly, people residing within Bacoor, Cavite, in terms of their age, sex, marital status, highest educational attainment to the employment status.

The table below shows the demographic profile of respondents. Thirty-nine percent of the respondents are ages 19 to 21, 142. Thirty-four percent of the respondents are ages 22 to 29, 54 or 13 percent are ages 30 to 39, 29 or 7 percent are ages 40 to 50, and 25 or 6 percent are ages above 50.

Demographic Profile		Frequency	Percent
Age	19-21	162	39
	22-29	142	34
	30-39	54	13
	40-50	29	7
	Above 50	25	6
	Total	412	100
Sex	Male	204	49.50
	Female	208	50.50
	Total	412	100
Marial Status	Single	254	62
	Married	112	27
	Legally Separated	7	2
	Widowed	39	9
	Total	412	100
Highest Educational Attainment	College	242	59
	Elementary/Highschool	170	41
	Total	412	100
Employment Status	Employed	140	34
	Student	212	51
	Unemployed	60	15
	Total	412	100

For the sex demographic profile, 204, or 49.5 percent, of the respondents are males, and 208, or 50.5 percent, are females. For marital status, 254 or 62 percent are single respondents, 112 or 27 percent are married, 7 or 2 percent are legally separated, and 39 or 9 percent are widowed. For the highest educational attainment, 242 or 59 percent of the respondents are college graduates, while 170 or 41 percent are non-college graduates. For employment status, 140 or 34 percent of the respondents are employed, 212 or 51 percent are students, and 60 or 15 percent are unemployed.

The study's statistics reveal that the youngest and oldest respondents residing within Bacoor, Cavite are 19 and 58 years old, respectively. The average age is within the bracket of 22-29 years old. Respondents generally comprise females who are adults and within the age bracket of 22-29 years old. According to the statistical result, most respondents fall within the adult bracket, representing 34 percent of the total respondents. The result signifies that adults are more prone to burn injuries than other age brackets. The result contradicts the study by the World Health Organization that children are particularly vulnerable to burn injuries compared to adults. Children claims to be the fifth non-fatal injury of childhood.

Out of 412 respondents, about 204 aremales representing 49.50% of the total respondents covered in the study, and 208 are females representing 50.50 percent, as shown in Table 1. The results show that females constitute the more significant percentage in the study area. Women are usually the home's caretakers in cooking, cleaning, and washing. The results indicate that females have slightly higher rates of knowledge of burn injuries compared to males. The result supports the claim of the World Health Organization that females are more prone to burn injuries. The results are usually associated with open-fire cooking and the unsafe use of cooking stoves. The results contradict the study of Seyed-Forootan *et al.* (2016), where burns are more common in children under five, with flames being the most prevalent cause in older children.

Regarding marital status, 62 percent are married, followed by 27 percent as single. 2 percent of the total respondents covered in the study are legally separated, followed by 9 percent who are widowed. The highest educational attainment of respondents in the research locale is categorized into two groups; elementary or high school level and college level. There are 242 respondents representing 59 percent who are in elementary or high school.

About 170 respondents representing 41 percent, are at the college level. Bacoor is known as the first-class and most urbanized province of Cavite, Philippines, in terms of income and level of urbanization. A significant portion of about 59 percent of the respondents is associated with elementary level and high school,

In terms of employment status, results reveal that most of the 51 percent of the respondents, 34 percent of the respondents are employed, representing 140; and 15 percent are unemployed, covering 60 respondents.

The following information and further are all about the 412 respondents' perceptions of burn injuries. Table 2 below presents the awareness of non-pharmacological remedies for burn wound injuries.

Statement	Response	Frequency	Percent
1. Washing the burned area with cool water is the first correct step in case of burn injuries.	Correct	349	85
	Incorrect	63	15
	Total	412	100
2. In case of burn injury, which one out of the following traditional medications will you consider applying? (You can check one or more box)	Correct	34	8
	Incorrect	378	92
	Total	412	100
3. Burns can lead to permanent injuries.	Correct	345	84
	Incorrect	67	16
	Total	412	100
4. In case of burn injury, picking or popping blisters is not advisable to do.	Correct	286	69
	Incorrect	126	31
	Total	412	100
5. Applying first aid medicine at home on a burned area leads to a better outcome.	Correct	291	71
	Incorrect	121	29
	Total	412	100
6. In case of burn injury, apply water for:	Correct	82	20
	Incorrect	330	80
	Total	412	100
7. In case of burn injury, if your clothes were on fire you should roll on the ground.	Correct	324	79
	Incorrect	88	21
	Total	412	100
8. In case of electrical burn injury, I should not touch the injured person if he/she is still in contact with the electrical current.	Correct	284	69
	Incorrect	128	31
	Total	412	100
9. In case of electrical burn injury, the first action is to turn off the source of electricity if possible.	Correct	316	77
	Incorrect	96	23
	Total	412	100
10. In case of burn injury, covering the burned area before heading to the hospital can decrease the risk of infection.	Correct	277	67
	Incorrect	135	33
	Total	412	100

The level of awareness of the respondents regarding non-Pharmacological remedies for Burn wound injuries

For statement number 1. 39, or 85 percent, got the correct answer, while 63, or 15 percent of the respondents, got the incorrect answer. The results show that washing the burned area with cool water is the first correct step in case of burn injuries. According to (Abdullah *et al.*,2016), to stop the burn process, immediately apply cold tap water for 20 minutes. Cold water, between 2–15°C, has been demonstrated to aid healing and ultimate cosmetic results and should be applied immediately and for the same amount of time.

For statement number 2. 34, or 8 percent, got the correct answer, while 378, or 92 percent of the respondents, got the incorrect answer. The data show that most respondents need to be aware that traditional medications/remedies (toothpaste, honey, aloe vera, oil, and ice) are not beneficial for burn injuries. Similar to the study of Mortada H., Malatani N., and Aljaaly H. (2020), research conducted in Saudi Arabia showed that more than half of their respondents are said to apply the said traditional remedies if given a chance to. At the same time, it is mentioned that those substances identified are harmful in terms of increasing pain,

tenderness, and skin sloughing, and pose risks of infection.

For statement number 3. 345, or 84 percent, got the correct answer, while 67, or 16 percent, of the respondents, got the incorrect answer. The result shows that most respondents know that burns can lead to permanent injuries. According to Rowan, M. (2015), the human skin acts as a shield to the external environment; it serves many functions, including homeostasis, body temperature, sensory functions, and protection. In case of burn wound injuries, the skin is impaired along with its functions, which can lead to susceptibility to bacterial infections. A study by Coban, YK (2012) said that infection risk is high for burn wound patients. The risk of acquiring drug-resistant infection was also mentioned to be very high in the study of Branski, LK (2009).

For statement number 4. 286, or 69 percent, got the correct answer, while 126, or 31 percent, of the respondents, got the incorrect answer. The data show that most respondents know that picking or popping blisters is not advisable in case of a burn injury. According to Healthline (2018), popping blisters is not a good practice when experiencing burns as it may lead to further infection. the Study of Coban again supports the results of the statistics of YK (2012) whether popping blisters is not a good practice in burn. the risks for infection with popping blisters is high for burn wound patients as well as the risk of acquiring drug-resistant infection (Branski, LK (2009).

For statement number 5. 291, or 71 percent, got the correct answer, while 121, or 29 percent of the respondents, got the incorrect answer. The result shows that most respondents know that applying for first aid medicine at home in a burned area leads to a better outcome. Healthline (2019) indicates that one first-aid medicine used for burn injuries is Acetaminophen, as it can act as a painkiller. Another study by Hudspith (2004) suggested that using non-steroidal anti-inflammatory drugs like ibuprofen can be considered as one of the first aid drugs for burn injuries as it can lessen the pain for the patient.

For statement number 6. 82, or 20 percent, got the correct answer, while 330, or 80 percent of the respondents, got the incorrect answer. The study's data show that most respondents are unaware that a person

should apply water for a minimum of ten to maximum of fifteen minutes. According to the first statement (Abdullah *et al.*, 2016), to stop the pain of burn, immediately apply cold tap water for about 20 minutes. the studlts of the study is backed by the study of Hudspith (2004)< which indicated that active cooling proevnts the birn from progression further. it is said to be the most effective when cooling lasts at least 20 minutes.

For statement number 7. 324, or 79 percent, got the correct answer, while 88, or 21 percent of the respondents, got the incorrect answer. The data show that most respondents know that a person should roll on the ground in burn situations involving clothes on fire. As said by the WHO on 2018, once caught in a fire, a person should stop the burning process by removing clothing. Extinguishing the flames is the next step and can be achieved by rolling on the ground.

For statement number 8. 284 respondents, or 69 percent, provided the correct response, whereas 128 respondents, or 31 percent, provided the incorrect response. On electrical burn injury, the majority of respondents are aware that they should not touch the victim if still in contact with the electrical current or device. For statement 9, 316 respondents or 77 percent, provided the correct response, while 96 respondents, or 23 percent provided the erroneous response. This demonstrates that most respondents are aware that, if feasible, the first and the smartest step to do in the situation of electrical burn is to turn the source of electricity off. it is not advised to hold or have any physical Contact with a person who has been hurt and burned with electricity, especially people that are still in contact with the electricity.

For statement number 10. 277, or 67 percent, got the correct answer, while 135, or 33 percent, of the respondents, got the incorrect answer. The study's data show that most respondents know that before going to the hospital, covering the burned area can reduce the chance of infection. According to Shrivastava (2010), contamination prevention is vital in curing burns. Aside from applying first aid medicines and remedies such as water, covering the burnt part of the body minimizes contamination and further infection. It also poses other benefits to the patient, such as additional protection while transported to the nearest hospital or clinic and reduced pain and discomfort.

Statement	Frequency	Percent
Yes, I go to the clinic or hospital	163	40
No, I treat it myself	204	50
No, I just ignore it	45	11
Total	412	100

The table above shows the summary of responses regarding treating the burn wound. Out of 412 responses, 163 or 40 percent responded that they go to a clinic or hospital to seek burn wound treatment, 204 of 50 percent

of respondents preferred self-treatment, and 45 or 11 percent of the respondents claimed that they just ignore the burn wound.

As the data show, most of the respondents are most likely to do self-medication for their burn wound injuries. This data can be supported by the latest Philippine Care Wellness Index of 2021. The statistics conclude that self-medication is significant.

The table above shows the summary of responses in treating the burn wound. Out of 412 responses, 163 or 40 percent responded that they go to a clinic or hospital to seek burn wound treatment, 204 of 50 percent of the

Statement	Response	Frequency	Percent
11. Taking acetaminophen (Paracetamol) for pain relief can be done as first aid for burns.	Correct	96	23
	Incorrect	316	77
	Total	412	100
12. In case of burn injury, it is beneficial to use antibiotics (Amoxicillin) for management.	Correct	229	56
	Incorrect	183	44
	Total	412	100

For statement number 11, "Taking acetaminophen or paracetamol for pain relief can be done as first aid for burns," 96 or 23 percent of the respondents have correct answers. In comparison, 316 or 77 percent of the respondents have incorrect answers. The result is that most respondents are unaware that taking acetaminophen or paracetamol for pain relief can be done as a first aid for burns.

Minor Burns, such as First to second burns no larger than 3 inches, usually are treated with simple first aid, ointments, and pain medications such as acetaminophen or paracetamol (Parhak, 2020). there are cautions when giving pain medications to patients who are 18 and below, it is said that OTC medications for pain such as aspirin are safely given for ages 18 and below to lessen the pain of the burn area (Baum, 2018).

On statement number 12, antibiotics (amoxicillin) are advantageous for the treatment of burn injuries, 229 or 56 percent of the respondents have correct answers, while 183 or 44 percent of the respondents have incorrect answers. The data suggest that most respondents are unaware that antibiotics (amoxicillin) have no beneficial effects on burn injury.

The majority agreed that antibiotics can have a possibility of having advantage despite the fact that antibiotics are a prescription medicine and are not usually the first line treatment in burn injuries, specifically as low as 44 percent. In countries such as Southeast Asia, self-trained quacks, unskilled medical personnel in rural areas, and the general public (Pearson CA, 1995) contribute to misuse of antibiotics.

Antibiotic resistance tends to happen by not providing the proper drugs correctly, being unaware of their long term harmful effects and therefore being put into more danger for drug resistant (Ikeke, 1999). Self-medication will be expected when antibiotics are administered over

respondent's preferred self-treatment, and 45 or 11 percent of respondents claimed that they ignore the burn wound.

As the data show, most of the respondents are most likely to do self-medication for their burn wound injuries. This data can be supported by the latest statistics of the Philippine Care Wellness Index of 2021, which concludes that 1,500 of their respondents have been claimed to be not self-medicating.

the counter in drug stores and market stalls. As a result of these unethical behaviors, antibiotics are frequently misused, which raises selective pressure and antimicrobial resistance.

The misuse of antibiotics is also common in healthcare, especially in the intensive care unit (ICU), which is a ground for developing antimicrobial resistance due to exposure to heavy antibiotic use in patients (Struelens et al., 1998).

The overuse of antibiotics in developing countries like the Philippines, among other reasons, is patient-driven, where laboratory diagnostic facilities, as well as Burn Care Units, are scarce. According to the study of Darang regarding the awareness of rehabilitation of burn victims, there are only five hospitals in the Philippines that have Burn Care Units. For 100 million Filipino burn patients, there are only 40-45 available beds.

As stated by the Philippine National Formulary and National Antibiotic Guidelines representative Cecilia Maramba-Lazarte, since antibiotics are prescribed strictly by the physician, pharmaceutical companies have stopped investing in research in recent years due to the low return of investment. There may be no new ones, or they are still far from being discovered. A report from the antimicrobial resistance surveillance program (ARSP) stated that skin infections due to staphylococcus aureus, primarily found in burn wounds, are curable with Oxacillin.

Based on the above results, respondents encounter adverse effects such as rashes (198 or 12 percent), skin sensitivity (175 or 11 percent), drowsiness (75 or 5 percent), wound discoloration (102 or 5 percent), upset stomach (71 or 4 percent), burning sensation (95 or 6 percent), dry mouth (65 or 4 percent), irritation (112 or 7 percent), constipation (64 or 4 percent), itching (104 or 6 percent), pain (114 or 7 percent), redness (130 or 8

percent), Insomnia (69 or 4 percent), Swelling of the skin (126 or 8 percent), and nausea and vomiting (102 or 6 percent).

Negative Effects of Burn Creams	Frequency	Percentage
Rash	198	12
Skin Sensitivity	175	11
Drowsiness	75	5
Wound discoloration	102	6
Upset Stomach	71	4
Burning Sensation	95	6
Dry Mouth	65	4
Irritation	112	7
Constipation	64	4
Itching	104	6
Pain	114	7
Redness	130	8
Insomnia	69	4
Swelling of skin	126	8
Nausea and Vomiting	102	6
TOTAL	1602	100

The Different types and dosage forms of burn creams are available in the market. Usually, topical forms such as ointments and creams cause Skin sensitivity or allergic skin reactions that can manifest in itching, redness, or tiny blisters.

Skin antiseptics like Povidone-Iodine may cause side effects like swelling, pain, warmth, redness, oozing, blistering, or crusting, rash, severe irritations, fever, and burning (Multum, 2021). It is strictly not recommended if the patient is allergic to iodine or povidone, has hyperthyroidism or thyroid disease, is in lithium therapy, or has any radioactive iodine treatment. Prolonged exposure to the wet solution may cause irritation that can result in skin reactions (MIMS, 2021).

Topical antibiotics like silver sulfadiazine have the possibility of having burns connecting with skin problems to having an upset stomach (Cunha, 2022). A study of Fuller on 2009 about the side effects of silver sulfadiazine also concluded that an allergic reaction could occur to burn patients known as sulfa allergy as well as sensitivity to silver hemolysis in glucose-6-

phosphate dehydrogenase (G6PD) deficiency, formation of immune complexes, and methemoglobinemia (Fuller, 2009).

Out of all the side effects listed by the respondents, insomnia is the most uncommon, with 4 percent (4%). According to the study by Wiechman in 2020, sleep problems occur in more than 50 percent (50%) of the patients who have had minor to severe burn injuries, resulting in difficulty in falling or staying asleep, poor quality of sleep, and nightmares. Sleep problems are widespread after a burn injury, during the healing and recovery stages. It can come and go over the years, needing unique solutions as everyone has different experiences after a burn injury. Many factors can disturb sleep after a burn injury. These are anxiety and post-traumatic stress disorder (PTSD), depression, pain, itching, side effects of other medication that can keep the patient awake, sleep apnea, contractures caused by the scar tissue, and difficulty of breathing that can cause minor side effects like discomfort and pain in certain parts of the body, constipation, itchiness, and irritations (Wiechman, 2020).

Positive Effects	Frequency	Percentage
Antimicrobial	275	31
Whitening	104	12
Skin relief	137	15
UV protection	76	9
Antibacterial	161	18
Disinfectant	146	16
TOTAL	899	100

The table above shows the summary of responses regarding the positive effects of burn cream. As per responses, respondents claim that burn creams have an antimicrobial effect (275 or 31 percent), whitening effect (104 or 12 percent), skin relief (137 or 15 percent), UV

protection (76 or 9 percent), antibacterial (161 or 18 percent), and disinfect (146 or 16 percent).

Based on the results, burn creams positively affect burn wounds. The data above illustrate the frequency with the

corresponding percentage of each data identified by the respondents. The highest percentage based on respondent votes is the antimicrobial effect.

According to Tenenhaus and Rennekampff (2021), antimicrobial agents in burn ointment can ease and help with wound cleansing, such as on the face, ears, and perineum, which are sensitive areas. In addition, Cartotto (2017) said that antimicrobial agent is now a standard intervention contributing to improved outcomes from a topical to a burn wound following burn injury.

The second highest is the antibacterial effect. It is claimed that burn creams have an antibacterial agent to prevent wounds from infection. MayoClinic (n.d.) Identified an example of antibacterial cream such as silver sulfadiazine. Silver sulfadiazine is an antibiotic, a good treatment for people experiencing second to third-degree burns with wound infections as it is good in killing bacteria or preventing their growth.

The third-highest percentage of votes from respondents is the disinfectant/antiseptic. Due to reduced defense capabilities and immune dysfunction, burn patients can be easily subject to colonization by microorganisms. Burn wounds are open wounds that are easily infected (Slaviero et al., 2018).

Norman et al. (2017) have shown a review of evidence on antiseptic burns, which states that there is uncertainty about whether antiseptics differ in healing, infections, or

other outcomes. most trials that are enrolled in their study with recent burns were adults, in the study it explains that adults got second degree burns that are less than 40 percent of thier today body surface area, antiseptic treatment is unsure of oncreasing or reducing that possible dangers of birn infection compared to topical antibiotics (Norman et al., 2017).

The fourth highest percentage is skin relief, followed by whitening and UV protection effects. Gan et al. (2021) demonstrated how a pharmacologically active traditional Chinese medical formulation heals burn wounds. It can accelerate wound healing and helps tissue recover faster. Accordingly, Govindaraju et al. (2019) said that healing burns and scald wounds involve three stages: inflammation, tissue hyperplasia, and regeneration.

The whitening effects from burns explain that skin discoloration, such as whitening on the skin or skin pigmentation, is one of the effects of burn injury (Dai et al., 2018). burn cream with UV protection is essential for an individual with burn injury.

The predominant source of information for the respondents regarding burn injuries

Based on the responses, their sources of knowledge are seminars/webinars (134 or 19 percent), social media (184 or 26 percent), schools (177 or 25 percent), health campaigns (82 or 11 percent), workplaces (40 or 6 percent), the experience of a friend or one's self (102 or 13 percent).

Source Knowledge	Frequency	Percentage
Seminars/Webinars	134	19
Social Media	184	26
School	177	25
Health Campaigns	82	11
Workplace	40	6
Experience of a friend or one's self	102	14
Total	719	100

As shown in Table 7, the first highest source of respondent information about remedies for burn injury is social media having a frequency of 184 and 26 percent. Social media is a practical and feasible method for disseminating information to avoid burn injuries (Batra et al., 2021). Social media also offers the potential for significant, unrealized gains in education, communication, and teamwork, but it is not a foolproof method of injury prevention. Injury prevention is made possible by social media platforms like Facebook, Twitter, and YouTube since they facilitate information sharing, interaction, queries, posting links and videos, and much more. However, individuals' effective and efficient use of these technologies might mean the difference between success and failure (Banfield & Tanenbaum, 2016).

The second highest source of information is the school, with a frequency of 177 and a percentage of 25. The study by D'cunha et al. (2021) found that school-based health education was one of the essential sources of treatments or first aid knowledge. Sixty-one percent (61%) of those who replied to the study had some first-aid experience, often thanks to health classes they had taken in school.

The third highest source of knowledge is the seminars/webinars having a frequency of 134 and 19 percent. Individuals should have seminar/webinar training in first aid to gain knowledge and skills in burn injuries. In this manner, training will enable individuals with the proper training to respond appropriately in situations that generate a greater complexity in daily life (Qtait et al., 2019). The researchers also mentioned that people need

more training in first aid, considering that managing burns with first aid is easy, affordable, and accessible.

According to respondents, the fourth-highest source of knowledge is a friend's or self's experience. A person exposed to or has experience with burn injuries will likely develop an awareness of how to deal with the situation and can give advice or information based on experience.

Moreover, health campaigns, one of the identified sources of information for dealing with burn wounds, with 82 votes garnering 11% of the total responses, is essential. According to Kit Lum *et al.* (2022), it improves public knowledge and awareness by implementing first aid education for burn injuries that can be held in shopping malls and at general public gatherings. However, in today's Covid-19 pandemic, people are prohibited from having public gatherings. Social media platforms have become the primary tool for disseminating information and imparting first aid knowledge about burns to the general public.

Lastly, the workplace has a frequency of 40 and a percentage of 6. Knowledge and awareness of hazard prevention can drastically avoid possible risks of burns in a specific environment. Implementing proper training for employees and having an overview of OSHA- 10-hour training is an excellent way to get a baseline for safety standards training. In addition, individuals gain knowledge and skills in burn injuries in the workplace with regular up-to-date training (USFOSHA, 2022).

In conclusion, social media is the predominant source of information regarding burn remedies and prevention. At the same time, the workplace is a minor source of information on burn injuries since not all participants are working individuals.

SUMMARY OF FINDINGS

The following statements are notable key points of the study which correspond to the problem statement:

According to the demographic profile data, most respondents are 19-21 years old, representing 39 percent of the total 412 respondents. Most of the respondents are single, which comprise 62 percent of the total 412 respondents. Most of them can achieve a college degree as their highest educational attainment, which comprise 59 percent of the total 412 respondents. In terms of employment status, the majority of the respondents are students, which comprise 51 percent of the total 412 respondents.

Regarding the respondents' level of awareness of non-pharmacological remedies for burn wound injuries, the respondents are deemed aware of having most of the questions answered correctly. The respondents got an average positive score of 62.9 percent in all ten questions concerning non-pharmacological remedies for burn wounds.

Majority of the respondents preferred self-medicating when they were able to encounter a burn injury, which comprise 50 percent of the total 412 respondents.

On the respondents' level of awareness regarding pharmacological remedies for burn wound injuries, the respondents need to be made aware of having most of the questions answered incorrectly. The respondents got an average 60.5 percent incorrect score for the two questions concerning pharmacological remedies for burn wounds.

CONCLUSION

Although the respondents showed positive results regarding the level of awareness non-pharmacologically, their level of awareness regarding the pharmacological remedies showed negatively, resulting in indecision when encountering burn wound injury leading to self-medication and potentially worsening the burn injury. A strong educational program for the residents of Bacoor City, Cavite, can help raise to raise their knowledge of first aid for burn injuries. The study will help in improving the success and availability of the best care for burn patients.

RECOMMENDATION

The study's results must be taken seriously to address the deficiencies regarding the awareness of the non-pharmacological and pharmacological burn injury remedies. The use of social media platforms can be an essential factor in spreading information to the respondents regarding burn injury remedies as it is shown to be effective in disseminating sources of knowledge regarding the topic. Public education on burn injuries must be implemented to reduce the rising morbidity and mortality rates arising from burn injuries.

ACKNOWLEDGEMENT

We would like to express our deepest gratitude to all those who have supported and contributed to the completion of this manuscript. Without their unwavering support, guidance, and encouragement, this research would not have been possible.

We would like to extend our sincere appreciation to our ever-supportive program chair, Assoc. Prof. Anthony R. Marin, RPh, MSPharm for his undying support. For the enlightenment he shared to our queries, and for encouraging us that we can successfully finish the manuscript on time.

We are grateful to Prof. Philip Cuizon, RPh for his mastery of statistical methods that have been crucial in analyzing and interpreting our research data. His expertise has added depth and credibility to the research, and we are sincerely grateful for his contributions.

Special acknowledgement and deepest gratitude to Mark Joseph L. Clamor, for imparting his knowledge into making the thesis possible and helped us finish this long

and difficult journey, from title proposal to our final defense. We thank you for being our team leader and helping us until the end.

And lastly, we would like to give glory and praise to our Almighty God for His endless love and gift of wisdom as we embark this journey. To God be all the glory!

REFERENCES

BOOKS

- Adams, M. P., Holland, N., & Urban, C. (2021). *Pharmacology for Nurses: A Pathophysiologic Approach* (6th ed.). Pearson.
- Alberts, B., Johnson, A., Lewis, J., Morgan, D., Raff, M., Roberts, K., & Walter, P. (2014). *Molecular Biology of the Cell* (6th ed.). Garland Science.
- American Academy of Orthopaedic Surgeons (AAOS). (2016). *Emergency Care and Transportation of the Sick and Injured* (11th ed.). Jones & Bartlett Learning.
- Baranoski, S., & Ayello, E. A. (2020). *Wound Care Essentials: Practice Principles* (5th ed.). Wolters Kluwer.
- Coico, R., & Sunshine, G. (2019). *Immunology: A Short Course* (7th ed.). John Wiley & Sons.
- Hammack, P. L. (2018). *The Oxford Handbook of Social Psychology and Social Justice*. Oxford University Press.
- Ignatavicius, D. D., Workman, M. L., Rebar, C. R., & Heimgartner, N. M. (2016). *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care* (10th ed.). Saunders.
- Katzung, B. G., Trevor, A. J., & Kruidering-Hall, M. (2018). *Basic and Clinical Pharmacology* (14th ed.). McGraw-Hill Education.
- Kumar, V., Abbas, A. K., & Aster, J. C. (2021). *Robbins and Cotran Pathologic Basis of Disease* (10th ed.). Elsevier.
- Lewis, S. L., Bucher, L., Heitkemper, M. M., Harding, M. M., Kwong, J., & Roberts, D. (2016). *Medical-Surgical Nursing: Assessment and Management of Clinical Problems* (10th ed.). Elsevier.
- Lilley, L. L., Rainforth Collins, S., Snyder, J. S., & Snyder, S. J. (2021). *Pharmacology and the Nursing Process* (10th ed.). Elsevier.
- McCance, K. L., Huether, S. E., Brashers, V. L., & Emberger, G. M. (2018). *Pathophysiology: The Biologic Basis for Disease in Adults and Children* (8th ed.). Elsevier.
- Murray, P. R., Rosenthal, K. S., & Pfaller, M. A. (2016). *Medical Microbiology* (8th ed.). Elsevier.
- Myers, B. (2019). *Wound Management: Principles and Practice* (3rd ed.). Pearson.
- Pearson, C. A. (1995). The role of district hospitals and the action in international medicine network. *Infectious Disease Clinics of North America*, 9(2), 391-405.
- Rosenthal, L., Burchum, J., Rosenthal, L., Rosenthal, J., & Rosenjack, J. (2020). *Lehne's Pharmacotherapeutics for Advanced Practice Nurses and Physician Assistants* (2nd ed.). Saunders.
- Sheridan, R. L. (2017). *Pediatric Burns* (1st ed.). Springer.
- Tortora, G., & Grabowski, R. (1996). *Principles of Anatomy and Physiology*, Harper Collins College Publishers, New York, 8th Edition, p.136.
- Tortora, G. J., Funke, B. R., & Case, C. L. (2019). *Microbiology: An Introduction* (13th ed.). Pearson.
- Urden, L. D., Stacy, K. M., & Lough, M. E. (2018). *Critical Care Nursing: Diagnosis and Management* (8th ed.). Elsevier.
- Warfield, C. A., & Bajwa, Z. H. (2017). *Principles and Practice of Pain Medicine* (3rd ed.). McGraw-Hill Education.
- Wiechman, S. A. (2020). Long-Term Outcomes Following Burn Injuries. In *Handbook of Burns Volume 2* (pp. 15-23). Springer, Cham.
- Willey, J., Sherwood, L., & Woolverton, C. J. (2018). *Prescott's Microbiology* (11th ed.). McGraw-Hill Education.
- World Health Organization. (2014). *Health Emergency Response: The Role of WHO and Guidelines for WHO Collaboration with External Partners* (3rd ed.). WHO Press.
- Yoost, B. L., & Crawford, L. R. (2019). *Fundamentals of Nursing: Concepts, Process, and Practice* (11th ed.). Elsevier.

JOURNALS

- Abesamis, G. M. M., & Cruz, J. J. V. Bacteriologic profile of burn wounds at a tertiary government hospital in the Philippines—UP-PGH ATR Burn Center. *Journal of Burn Care & Research*, 2019; 40(5): 658-668.
- Acosta, A. S., AZARCON-LIM, J. E. A. N. E., & Ramirez, A. T. Survey of electrical burns in Philippine General Hospital. *Annals of the New York Academy of Sciences*, 2006; 888(1): 12-18.
- Alomar, M., Al Rouqi, F., & Eldali, A. Knowledge, attitude, and beliefs regarding burn first aid among caregivers attending pediatric emergency medicine departments. *Burns*, 2016; 42(4): 938-943.
- Arifuzzaman, M., Muhammad, F., Farahnaz, S., Chowdury, A. R. M. M., Shahjahan, M., & Chowdhury, A. A. Burn prevention and first aid knowledge among high school students in Bangladesh. *Daffodil Int Univ J Allied Health Sci.*, 2016; 3(1): 41-9.
- Banfield, J., & Tanenbaum, B. (2016). 1024 Effective use of social media in injury prevention. Retrieved from <http://dx.doi.org/10.1136/injuryprev-2016-042156.1024>
- Batra, N., Colson, C. D., Alberto, E. C., & Burd, R. S. Using social media for the prevention of pediatric burn injuries: pilot design and usability study. *JMIR formative research*, 2021; 5(7): e23242. DOI: 10.2196/2324.

7. Cartotto, R. (2017). Topical antimicrobial agents for pediatric burns. *Burn Trauma* 5,33. Retrieved from <https://doi.org/10.1186/s41038-017-0096-6>
8. D'cunha, A., Rebekah, G., Mathai, J., & Jehangir, S. (2021). Understanding burn injuries in children—A step toward prevention and prompt first aid. *Burns*. Retrieved from <https://doi.org/10.1016/j.burns.2021.07.010>
9. Dai, N. T., Chang, H. I., Wang, Y. W., Fu, K. Y., Huang, T. C., Huang, N. C., Li, J.K., Hsieh, P. S., Dai, L. G., Hsu, C. K., & Maitz, P. K. Restoration of skin pigmentation after deep partial or full-thickness burn injury. *Advanced drug delivery reviews*, 2018; 123: 155–164. DOI: 10.1016/j.addr.2017.10.010.
10. Diniz NMF, Rodrigues AD, Bishop TCF, Gomes NP. Domestic violence assistance to women with bodily harm. *Rev Baiana Nursing*, 2002; 15(1/2): 55-62.
11. Diniz NMF, Lopes RLM, Rodrigues AD, Freitas DS. Women burned by husbands or partners.
12. Fuller, F. W. The Side Effects of Silver Sulfadiazine. *Journal of Burn Care & Research*, 2009; 30(3): 464–470. DOI: 10.1097/bcr.0b013e3181a28c9b
13. Gan, D., Su, Q., Su, H., Wu, L., Chen, J., Han, B., & Xiang, M. (2021). Burn Ointment Promotes Cutaneous Wound Healing by Modulating the PI3K/AKT/mTOR Signaling Pathway. *Frontiers in Pharmacology*. Retrieved from <https://doi.org/10.3389/fphar.2021.631102>
14. Govindaraju, P., Todd, L., Shetye, S., Monslow, J., & Puré, E. CD44-dependent inflammation, fibrogenesis, and collagenolysis regulates extracellular matrix remodeling and tensile strength during cutaneous wound healing. *Matrix Biol.*, 2019; 75–76: 314–330. doi: 10.1016/j.matbio.2018.06.004
15. Hudspith, J. (2004). First aid and treatment of minor burns. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC428524/>
16. Israel, G. (n.d.). Determining Sample Size. Retrieved January 17, 2022 from https://www.tarleton.edu/academicassessment/documents/samplesize.pdf?fbclid=IwAR0rXekpiIj_WM1juZ6Qb3aBhCpP6vkN1jTOWsQz0tFEpeJTgSPob5qLE
17. Kattan, A., AlShomer, F., Alhujayri, A., Addar, A., Algerian, A., (2016). Current knowledge of burn injury first aid practices and applied traditional remedies: a nationwide survey.
18. Kit Lum, H., Lam, U., Hn, H., Fernandez, T. A., Kuladeva, D., Farah, N. S., Mohd Yussof, S. J. & Ibrahim, S. Public awareness of first aid treatment in acute burns. *Journal of Surgery and Medicine*, 2022; 6(4): 424-427. DOI: 10.28982/josam.971375
19. Korać, R. R., & Khambholja, K. M. Potential of herbs in skin protection from ultraviolet radiation. *Pharmacognosy reviews*, 2011; 5(10): 164–173. Retrieved from <https://doi.org/10.4103/0973-7847.91114>
20. Lee S. M, (2011) Treatment of the burn patient in primary care. Retrieved from: https://journals.lww.com/aswcjournal/fulltext/2010/11000/treatment_of_the_burn_patient_in_primary_care.8.aspx
21. Mortada H, Malatani N, Aljaaly H. (2020). Knowledge & awareness of burn first aid among health-care workers in Saudi Arabia: Are health-care workers in need for an effective educational program? DOI: 10.4103/jfmpc.jfmpc_811_20. PMID: 33110842.
22. Nable-Aguilera, M. A. A., & FPAPRAS, F. (2017). Profile of Patients Admitted in the University of the Philippines-Philippine General Hospital Alfredo T. Ramirez Burn Center from August 2013 to July 2015. *PJSS*, 72(2).
23. Norman, G., Christie, J., Liu, Z., & Westby, MJ. Antiseptics for burns. *Cochrane Database Syst Rev.*, 2017; 7: CD011821.
24. Okeke, I. N., Lamikanra, A., & Edelman, R. Socioeconomic and behavioral factors leading to acquired bacterial resistance to antibiotics in developing countries. *Emerging infectious diseases*, 1999; 5(1): 18.
25. Qtait, M., Alekel, K., & Asfour, A. First aid: level of knowledge of relatives in emergencies in burn. *International Journal of Biomedical and Clinical Sciences*, 2019; 4(1): 24-28.
26. Rossi LA, Barruffini RCP, Garcia TR, Chianca TCM. (1998). Burns: characteristics of cases treated in a teaching hospital in Ribeirão Preto (SP), Brazil. *Rev Panam Salud Pública*.
27. Shrivastava, P., Goel, A., (2010). Pre-hospital care in burn injury. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3038405/>

ARTICLES

1. Abdullah E.K., Feras A., Abdulaziz K.A., AbdullahA., & Albaraa A., (2016). Current knowledge of burn injury first aid practices and applied traditional remedies: a nationwide survey.
2. Baum, I. (2018). Treating Burns. National Safety Council. Retrieved from <https://www.marist.edu/documents/20182/907239/19F+First+Aid+TreatingBurns.pdf/bcf83101-7144-4357-8bac-e47fa56c2b75>
3. Branski LK, Al-Mousawi A, Rivero H, Jeschke MG, Sanford AP, Herndon DN. Emerging infections in burns. *Surg Infect*, 2009; 10: 389–97. doi: 10.1089/sur.2009.024.
4. Ciriaco, C. (2022). Study says majority of Pinoys self-medicate, self-diagnose. Retrieved from <https://businessmirror.com.ph/2022/02/02/>
5. Coban YK. Infection control in severely burned patients. *World J Crit Care Med.*, 2012; 1: 94–101. doi: 10.5492/wjccm.v1i4.94.
6. Darang J. (2012). PGH docs lead awareness of rehabilitation of burn victims. *Philippine Daily Inquirer*. Retrieved September 17, 2021, from

- <https://lifestyle.inquirer.net/43407/pgh-docs-lead-awareness-of-rehabilitation-of-burn-victims/>
7. MayoClinic. (n.d.). Silver Sulfadiazine (Topical Route). Retrieved June 29, 2022, From:<https://www.mayoclinic.org/drugs-supplements/silver-sulfadiazine-topical-route/proper-use>.
 8. Montemayor, M. T. (2019). Antibiotics abuse: Saving money at the expense of one's health. Philippine News Agency (PNA). Retrieved October 23, 2022, from <https://www.pna.gov.ph/articles/1082194>.
 9. Pathak, N. (2020). Pain Management, Guide: Burns. WebMD. Retrieved from <https://www.webmd.com/pain-management/guide/pain-caused-byburns>.
 10. Rowan, M., Cancio, L., Elster, E., Burmeister, D., Rose, L., Natesan, S., Chan, R., Christy, R., Chung, K. (2015). Burn wound healing and treatment: review and advancements. Retrieved September 22, 2022 from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4464872/>
 11. Seyed-Forootan.K., H. Karimi., S.A Motevalian., M. Momeni., R. Safari., & M. Ghadarjani (2016). LA50 in burn injuries. Retrieved January 15, 2022, from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5108221/>
 12. Shangpeng S., Huajun Y., Ya H., Xiang Z., Tao W., Ya L., Huiyun X., & Xiuquan S., (2016). Epidemiologic characteristics, knowledge, and risk factors of unintentional burns in rural children in Zunyi, Southwest China. Retrieved from: <https://www.nature.com/articles/srep35445>
 13. Slaviero, L., Avruscio, G., Vindigni, V., & Tocco-Tussardi, I. Antiseptics for burns: a review of the evidence. *Annals of burns and fire disasters*, 2018; 31(3): 198-203. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6367858/>
 14. Struelens, M. J. The epidemiology of antimicrobial resistance in hospital-acquired infections: problems and possible solutions. *Bmj*, 1998; 317(7159): 652-654.
 15. USFOSHA. (2022). Preventing Workplace Burns. USFOSHA. Retrieved May 11, 2022, from: <https://www.usfsha.com/osha-articles/workplace-burn-prevention/>
 16. Varun H., Neha T., Oliver M.F., Zhe L., & Peter K.M.M., (2019) First aid improves clinical outcomes in burn injuries: Evidence from a cohort study of 4918 patients.
- Biology online (2020). Pharmacology. Retrieved from: <https://www.Biologyonline.com/dictionary/pharmacology>.
- Carol D.S (2021). What are the types and degrees of burns. Retrieved from: <https://www.webmd.com/first-aid/types-degrees-burns>
- CDC (2021). Antimicrobial resistance. Retrieved from: <https://www.cdc.gov/drugresistance/about.html>
- Cunha, J. P. (2022). Topical Antibacterial: Silver Sulfadiazine. Retrieved from <https://www.rxlist.com/silvadene-side-effects-drugcenter.htm#overview>.
- Healthline (2019). Performing First Aid for Burns Retrieved from <https://www.healthline.com/health/first-aid-with-burns>
- Healthline (2018). Should You Pop a Burn Blister? Retrieved from <https://www.healthline.com/health/should-you-pop-a-burn-blister>
- MayoClinic (2022). Electrical shock: First aid. Retrieved from <https://www.mayoclinic.org/first-aid/first-aid-electricalshock/basics/art20056695#:~:text=Caution,the%20power%20is%20turned%20off>.
- MIMS (ND). Betadine Cream/Ointment. Retrieved January 28, 2022, from: <https://www.mims.com/philippines/drug/info/betadine%20cream-ointment?type=full>
- MIMS Philippines (2022). Concise Prescribing Information Flammazine. Retrieved from <https://www.mims.com/philippines/drug/info/flammazine>
- MIMS Philippines (2022). Concise Prescription of Drugs: United Home Burn Ointment.
- MIMS Philippines (2022). Full Prescribing Information: Betadine Cream/Ointment.
- MIMS (ND). United Home Burn Ointment. Retrieved from: <https://www.mims.com/philippines/drug/info/united%20home%20burn%20ointment?type=full>
- Multum, C. (2021). Topical Disinfection: Povidone Iodine Topical. Retrieved from <https://www.drugs.com/mtm/povidone-iodine-topical.html>.
- Newman R.K, & Mahdy H. (2021). Laceration. Retrieved from: <https://www.ncbi.nlm.nih.gov/books/NBK545166/>
- NHS (2020). Burns and scalds. Retrieved from: <https://www.nhsinform.scot/illnesses-and-conditions/injuries/skin-injuries/burns-and-scalds>
- NIH (ND). Anti-Inflammatory Agent. Retrieved from: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/anti-inflammatory-agent>
- NIH (ND). Infection. Retrieved October 22, 2022, from: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/infection>
- NPS MEDICINEWISE (2010). Brand Information: Consumer Medicine Information leaflet: Flammazine. Retrieved from <https://www.nps.org.au/medicinesfinder/flamazine-cream>.

ELECTRONIC WEBSITES

Ahmed E.G, Yasser T., Fathi A.K., Muhammad P., & Mohammad A.N. (2018) Non-Pharmacological Pain Management. Retrieved from: <https://www.intechopen.com/chapters/62969>

Seyed-Forootean, K., Karimi, H., Motevalian, S. A., Momeni, M., Safari, R., & Ghadarjani, M. (2016). LA50 in burn injuries. *Annals of Burns and Fire Disasters*, 29(1), 14–17.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5108221/>

Tenenhaus, M., & Rennekampff, H-O. (2021). Topical agents and dressings for local burn wound care. Retrieved from <https://www.uptodate.com/contents/topical-agents-and-dressings-for-local-burn-wound-care>.

WHO (2016). WHO Factsheet on Burns. Accessed September 8, 2021, from: <http://www.who.int/mediacentre/factsheets/fs365/en/>.

World Health Organization (2018). Burns. Retrieved October 22, 2022, from: <https://www.who.int/news-room/fact-sheets/detail/burns>

World Health Organization. (2018, March 6). Burns. WHO; World Health Organization (WHO). <https://www.who.int/news-room/fact-sheets/detail/burns>