Hebron University

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Knowledge, Attitudes, and Practices towards the Use of Medicinal Plants in Skin Care Products among the Palestinian population in southern West Bank

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DEDICATION

To my beloved parents،

To my mother, may Allah grant her a long life،

To my dear husband،

To my children،

To my university, Al-Khalil University،

To all my family and friends who have been supportive and encouraging throughout my academic journey.

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After praising and thanking Allah for this humble work, I am pleased to extend my sincere thanks and appreciation to the supervisor of this thesis, Main Supervisor: Dr. Maysaa Nemer, Co-Supervisor: Dr. Sabri Saghir

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Abstract

The use of medicinal plants in skin care products has gained significant popularity in recent years due to growing interest in natural and organic products. However, there is limited research on the knowledge, attitudes, and practices of the Palestinian community towards the use of medicinal plants in skin care. This study aimed to investigate these aspects among Palestinians living in Hebron and Bethlehem governorates.The study utilized a quantitative approach using a survey questionnaire, The survey collected data from 504 participants aged 18 years and above, assessing their knowledge, attitudes, and practices towards medicinal plants in skin care. Results indicated a moderate level of knowledge among participants, with a strong preference for natural ingredients over synthetic ones. Attitudes towards medicinal plants in skin care were generally positive, although concerns regarding safety were noted. Participants demonstrated moderate practices in using such products, with a preference for those containing medicinal plants. Gender differences were found in knowledge, attitudes, and practices, while significant differences were observed based on marital status and age groups. However, no significant variations were detected concerning educational background, residence, or place of living.This study provides valuable insights into the knowledge, attitudes, and practices of the Palestinian community towards the use of medicinal plants in skin care. Findings can inform interventions aimed at promoting the use of these plants and contribute to the development of sustainable and natural approaches to skin care. Further research in this area is recommended to enhance understanding and address gaps in knowledge.

Chapter One: Background

1.1 Introduction

Medicinal plants are natural resources that have been used by various cultures for centuries to treat and prevent illnesses. These plants contain active chemical compounds with therapeutic properties and can be used to make traditional medicines or pharmaceutical drugs. The use of medicinal plants is a significant aspect of traditional medicine and remains prevalent in many parts of the world today. They have been employed for purposes such as treating infectious diseases, managing chronic illnesses, and alleviating symptoms associated with various health conditions. For instance, the bark of the cinchona tree contains quinine, used to treat malaria. The leaves of the Aloe vera plant contain a gel-like substance with anti-inflammatory and wound-healing properties, used to treat burns and skin irritations. Additionally, the root of the ginger plant has anti-inflammatory properties and is used to alleviate symptoms of nausea and vomiting (Hirschkorn & Boon, 2006).

The World Health Organization (WHO) estimates that 80% of the world's population uses medicinal plants for primary healthcare. This usage is particularly prevalent in developing countries where access to modern medicine is limited or non-existent. Medicinal plants are often more affordable and accessible than conventional drugs, and many people prefer them due to perceptions of safety and fewer side effects (World Health Organization, 2002). However, the use of medicinal plants is not without risks. Some plants contain toxic compounds that can cause adverse reactions, and the dosage and preparation can be challenging to standardize. Additionally, medicinal plants can interact with other medications and exacerbate certain medical conditions. Despite these challenges, there is growing interest in their use for treating various health conditions (Cragg & Newman, 2013; National Center for Complementary and Integrative Health, 2019). Researchers are exploring the therapeutic properties of many plants, and some traditional remedies are being incorporated into modern medicine. This research aims to investigate the knowledge, attitudes, and practices of the Palestinian community towards the use of medicinal plants in skincare products.

The use of medicinal plants in skincare products is becoming increasingly popular due to the growing interest in natural and organic products. In recent years, there has been a noticeable increase in the use of herbal medicines and natural health products by the public (Khdour et al., 2016). This trend has drawn the attention of regulators, researchers, and health professionals worldwide due to the high levels of consumption observed over the last decade. General practitioners, in particular, have shown a growing interest in the use of herbal drugs for the treatment of common ailments (Hirschkorn & Boon, 2006; Hasan & Behjat, 2000).

1.2 Problem Statement and Motivation of the study

Despite the growing popularity of the use of medicinal plants in skin care products, little is known about the knowledge, attitudes, and practices of the Palestinian community towards their use. This lack of knowledge creates a gap in understanding the factors that influence the use of medicinal plants in skin care products among Palestinians, which could hinder the development of effective interventions to promote their use.

The motivation for this study stems from the need to better understand the knowledge, attitudes, and practices of the Palestinian community towards the use of medicinal plants in skin care products. By filling this knowledge gap, the study aims to provide valuable insights into the factors that influence the use of medicinal plants in skin care products and to identify areas for intervention to promote their use.

The findings of this study will also contribute to the existing literature on the use of medicinal plants in skin care products and traditional medicine, and provide a basis for further research on this topic. Ultimately, the study aims to promote the use of medicinal plants in skin care products in Palestine and to contribute to the development of a more sustainable and natural approach to skin care.

1.3 Aim of the study:

The aim of this research is to investigate the knowledge, attitudes, and practices of the Palestinian community towards the use of medicinal plants in skin care products.

1.4 Objectives of the study

- To assess the level of knowledge among the Palestinian community about the use of medicinal plants in skin care products.

- To identify the attitudes of the Palestinian community towards the use of medicinal plants in skin care products.
- To explore the practices of the Palestinian community in using medicinal plants in skin care products.
- To examine the factors that influence the use of medicinal plants in skin care products among the Palestinian community.
- To provide recommendations for improving the use of medicinal plants in skin care products in the Palestinian community.

1.5 Research Questions

1. What is the **level of** Knowledge towards using of Medicinal Plants in Skin Care Products?
2. What are the Attitudes towards using of Medicinal Plants in Skin Care Products?
3. What are the Practices towards using of Medicinal Plants in Skin Care Products?
4. What are the factors associated with the knowledge, attitudes and practices towards using medicinal plants in skin care products?

1.6 Hypotheses

- The level of knowledge, attitudes, and practices towards the use of medicinal plants in skin care products is generally moderate among the Palestinian community.
- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products among males and females in the Palestinian community.
- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products among people with different educational backgrounds in the Palestinian community.

- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products among people with different socio-economic characteristics in the Palestinian community.
- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between residence (city, village, camp) in the Palestinian community.
- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between different age groups in the Palestinian community.
- There is no significant difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between place of living in, Hebron governorate, and Bethlehem governorate in the Palestinian community.

1.7 Study Setting

This study was conducted on the general public living in Hebron and Bethlehem Governorates, from December 2023 to February 2024, To assess Knowledge, Attitudes, and Practices towards the Use of Medicinal Plants in Skin Care Products among the Palestinian Community.

1.8 Definitions of The Study:

- Medicinal plants: Plants that possess therapeutic properties or compounds that can be utilized for medicinal purposes. These plants have been traditionally used in various cultures for treating diseases, promoting health, and managing symptoms. **Gopalakrishnan, S., & Dhanasekaran, D, 2013)**
- Skin care products: Substances or formulations applied topically to the skin to enhance its appearance, maintain its health, or address specific skin conditions. These products can include moisturizers, cleansers, serums, and sunscreens, among others. **(Draelos, Z. D, 2015).**

- Knowledge: The awareness or understanding acquired through learning, experience, or study. In the context of research, knowledge refers to the information or insights possessed by individuals or groups regarding a particular subject. **(Wilson, T. D, 2002).**
- Attitudes: The psychological tendencies or dispositions that predispose individuals to respond positively, negatively, or neutrally toward people, objects, or situations. Attitudes can influence behavior and decision-making processes. **(Ajzen, I, 2005).**
- Practices: The behaviors, actions, or activities performed by individuals or groups in a particular context or domain. Practices may encompass routine actions, customs, traditions, or professional activities. (**Wenger, E, 1998).**
- Herbal remedies: Preparations derived from medicinal plants that are used for therapeutic purposes, such as treating illnesses, alleviating symptoms, or promoting health. Herbal remedies may be consumed orally, applied **topically, or used in other forms of treatment. (Williamson, E. M, 2003).**
- Traditional medicine: Healing practices, beliefs, and knowledge systems that have evolved over time within various cultures and societies. Traditional medicine often encompasses herbal remedies, spiritual healing, and other non-conventional approaches to health and wellness. (Bodeker, G., & Burford, 2004)

Chapter Two: Literature Review

2.1 Historical Sources Relevant for study of Medicinal plants

The earliest recorded utilization of medicinal plants in drug preparation dates back to a Sumerian clay slab discovered in Nagpur, dating around 5000 years ago. This artifact contains 12 recipes detailing the use of over 250 different plants, including alkaloid-rich ones like poppy, henbane, and mandrake. (Kelly; 2009).

Emperor Shen Nung's "Pen T'Sao," a Chinese text on roots and grasses from around 2500 BC, explores 365 drugs derived from dried parts of medicinal plants. Many of these substances, such as *Rhei rhisoma*, *camphor*, *Theae folium*, *Podophyllum, the great yellow gentian, ginseng, jimson weed, cinnamon bark,* and *ephedra*, continue to be used in contemporary medicine. Additionally, the ancient Indian Vedas mention plant-based treatments, showcasing the rich tradition of herbal remedies in the region. India, in particular, has contributed numerous spice plants like *nutmeg, pepper, clove*, which remain widely used today. (Bottcher et all, 1965, & New Jersey, 2006)

Celsus (25 BC–50 AD), a distinguished medical writer, referenced around 250 medicinal plants in his work "De re medica." Some of the plants mentioned include *aloe, henbane, flax, poppy, pepper, cinnamon, star gentian, cardamom,* and *false hellebore*. This compilation adds to the growing knowledge of medicinal flora during that period. (Bazala, 1943)

Chamomile, known as *Chamaemelon* (Matricaria recucita L.), was highlighted for its antiphlogistic properties, used to heal wounds, stings, burns, and ulcers, as well as for eye, ear, nose, and mouth cleansing. Dioscorides mistakenly attributed abortive properties to *chamomile*, a belief later adopted by the Romans and Arabs, reflected in its Latin name, Matricaria, derived from "matrix" or "uterus." (Tucakov J, 1990)

Dioscorides identified various species of the Mentha genus, employed for relieving headaches and stomachaches. Sea onion and parsley bulbs served as diuretics, oak bark for gynecological purposes, and white willow as an antipyretic. He also noted the

potential for drug forgery, such as opium counterfeited with the sap of *yellow poppy* (Glaucium flavum) and poppy. Dioscorides warned about the authenticity of more expensive oriental drugs, transported by Arab merchants from the Far East, including iris, calamus, cardamomum, incense, among others. (Dimitrova Z, 1999)

The Arab civilization played a significant role in introducing numerous plants to pharmacotherapy, particularly from India, a nation with which they had trade relations. Many of these plants, recognized for their medicinal value, have endured in global pharmacopoeias to the present day. (Bojadzievski, 1992, & Gorunovic M, 2001) Among the plants the Arabs incorporated into their medical practices were *aloe, deadly nightshade, henbane, coffee, ginger, strychnos, saffron, curcuma, pepper, cinnamon, rheum*, and senna. *Notably*, they often replaced potent drugs with milder alternatives; for example, Sennae folium served as a mild laxative compared to the stronger purgatives Heleborus odorus and Euphorbium previously used. (Gorunovic, 2001)

During the Middle Ages, European physicians consulted Arab works such as "De Re Medica" by John Mesue (850 AD), "Canon Medicinae" by Avicenna (980-1037), and "Liber Magnae Collectionis Simplicum Alimentorum Et Medicamentorum" by Ibn Baitar (1197-1248). These texts described over 1000 medicinal plants, influencing medical practices across Europe. (Pelagic, 1970, & Katic R., 1958)

For effective and successful therapy, precise knowledge of the diagnosis and understanding of medicinal plants, including the pharmacological effects of their components, are essential. Plant drugs and phytopreparations, often with well-defined active components, verified actions, and sometimes therapeutic efficiency, serve as therapeutic agents. In major European herbal preparation hubs like Germany, rational phytotherapy is employed. This approach relies on the use of preparations whose efficacy is dose-dependent, with identified active components whose effectiveness is supported by experimental and clinical tests. These preparations are manufactured from standardized plant drug extracts, ensuring they meet all pharmaceutical quality requirements. (Lukic P, 1985)

2.2 **Herbal Medicines in Developed Countries**

Plants and their constituent metabolites have a rich history of use in both modern Western medicine and various traditional healing systems. They serve as the sources of crucial drugs such as atropine, codeine, morphine, and quinine. The utilization of herbal medicines in developed nations has witnessed a significant expansion, particularly in the latter half of the twentieth century (Taylor, 2000).

In recent years, there has been a renewed interest in traditional medicine and plant-based research. However, the Western appropriation of this knowledge has faced increasing scrutiny, with recognition of national and indigenous rights over these resources by most academic and industrial researchers (Tyler, 1999).

The growing desire to tap into the wisdom of traditional healing systems has sparked a resurgence of interest in herbal medicines, especially in Europe and North America. These herbal products have found integration into alternative, complementary, holistic, or integrative medical systems. (ESCOP, 1999). Various sources, including the European Scientific Cooperative on Phytotherapy, German Commission E, and the World Health Organization (WHO), provide monographs on selected herbs. These monographs offer comprehensive information about the herbs, including their synonyms and vernacular names, commonly used parts, geographical distribution, identification tests, active principles, dosage forms, medicinal uses, pharmacology, contraindications, and adverse reactions (Blumenthal et all, 1998).

The latter part of the twentieth century witnessed a surge in interest in self-care practices, leading to a substantial growth in the popularity of traditional healing modalities, including herbal remedies, particularly in the USA. (Fumonisin, 2002). In the European market, numerous products derived from natural plants are recognized for their diverse biological properties, such as antioxidant, antiseptic, diuretic, central nervous system stimulant, sedative, expectorant, and digestive properties. Many of these plants have been integral to traditional medicine for centuries and are available in various forms such as infusions, tablets, and extracts. (Schulz et all, 2001).

Consumers have expressed favorable attitudes towards these natural products, often perceiving them as safer alternatives to synthetic drugs. They believe that natural products are inherently safer and align better with a healthy lifestyle, reducing the need for unnecessary reliance on conventional Western medicine. (WHO, 1999)

2.3 Historical Use of Medicinal Plants in Palestinian Skincare

Palestinian skincare traditions have deep roots in the use of medicinal plants, dating back centuries. This essay explores the historical significance of medicinal plants in Palestinian skincare practices, shedding light on traditional remedies passed down through generations.

The use of medicinal plants for skincare in Palestine can be traced back to ancient times, where indigenous communities relied on natural remedies to address various skin concerns. Historical texts and oral traditions document the rich knowledge of herbal medicine among Palestinian healers and herbalists.

2.4 Medicinal Plants Used in Palestinian Skincare:

1 .Olive Oil (*Olea europae*)

- Olive oil holds a prominent place in Palestinian skincare rituals, valued for its moisturizing and nourishing properties. It is often used as a base for skincare preparations and massage oils. (Abu-Rabia, 2017)

2 .Rose Water (*Rosa damascene*)

- Rose water, obtained through the distillation of rose petals, is cherished for its soothing and toning effects on the skin. It is commonly used in facial cleansers and sprays in Palestinian skincare routines. (Said et al, 2011)

3 .Bitter Almond Oil (*Prunus dulcis var. amara*)

- Bitter almond oil is prized for its skin-rejuvenating properties, known to improve complexion and reduce the appearance of scars and blemishes. It is a common ingredient in traditional Palestinian skincare formulations. (Abu-Lafi et al, 2015)

4 .Chamomile (*Matricaria chamomilla*)

- Chamomile, with its anti-inflammatory and calming properties, has been traditionally used in Palestinian skincare to soothe sensitive skin, reduce redness, and alleviate irritation. (Aburjai et all, 2003)

The historical use of medicinal plants in Palestinian skincare reflects a holistic approach to beauty and well-being, rooted in nature and tradition. Despite modern advancements, many Palestinians continue to embrace these time-honored remedies, preserving a cultural heritage that celebrates the healing power of plants.

2.5 Factors Influencing Individual Knowledge of Medicinal Plants in Skincare

The utilization of medicinal plants in skincare is influenced by various factors that shape individuals' knowledge and practices. This essay explores the key determinants affecting individual awareness and understanding of medicinal plants in skincare routines, considering cultural, environmental, educational, and socio-economic factors.

2.5.1 Cultural Heritage:

Cultural heritage plays a significant role in shaping individuals' knowledge of medicinal plants in skincare. Traditional practices passed down through generations embed botanical remedies into cultural norms and rituals. For example, communities with a rich history of herbal medicine may have greater awareness and appreciation for the skincare benefits of medicinal plants. (WHO, 2002-2005)

2.5.2 Environmental Context:

The availability and abundance of medicinal plants in the local environment directly impact individuals' knowledge and usage. Those residing in regions with diverse flora may have greater exposure to a variety of plants suitable for skincare purposes.

Conversely, urbanization and habitat destruction can limit access to traditional medicinal plants, affecting knowledge transmission. (Heinrich et all, 2017).

2.5.3 Education and Awareness:

Education and awareness initiatives contribute to enhancing individuals' knowledge of medicinal plants in skincare. Formal education, community workshops, and online resources can provide valuable information on the identification, cultivation, and usage of medicinal plants. Increased awareness campaigns also promote sustainable harvesting practices and conservation efforts. (Pieroni et al, 2007).

2.5.4 Socio-Economic Status:

Socio-economic factors influence access to skincare products and resources, including medicinal plants. Economic disparities may limit individuals' ability to afford commercial skincare products, leading them to rely on traditional, plant-based remedies. Conversely, higher socio-economic status can provide access to premium skincare products containing botanical extracts. (Quave et all, 2015).

2.5.5 Healthcare Practices:

Individuals' healthcare practices and beliefs influence their utilization of medicinal plants in skincare. Those embracing holistic approaches to health may prioritize natural remedies over synthetic products. Additionally, cultural attitudes towards conventional medicine versus traditional healing modalities shape skincare preferences and practices. (Bussmann et all, 2021).

The knowledge of medicinal plants in skincare is shaped by a complex interplay of cultural, environmental, educational, socio-economic, and healthcare factors. Understanding these determinants is essential for promoting the sustainable use of botanical resources and preserving traditional knowledge. By addressing barriers to

access and enhancing awareness, individuals can harness the therapeutic potential of medicinal plants for skincare needs.

2.6 Attitudes Towards the Use of Medicinal Plants in Skincare

The use of medicinal plants in skincare has garnered significant attention worldwide due to their perceived naturalness, efficacy, and cultural significance. This essay explores attitudes towards the utilization of medicinal plants in skincare, examining both historical perspectives and contemporary trends. (Smith, 2007)

2.6.1 Historical Perspectives:

Throughout history, various cultures have embraced the therapeutic properties of medicinal plants in skincare. Ancient civilizations, including the Egyptians, Greeks, and Chinese, documented the use of botanical ingredients for cosmetic and medicinal purposes. These practices were often intertwined with spiritual beliefs and cultural rituals, highlighting the profound connection between nature and human well-being. (Grigore et al, 2015)

2.6.2 Traditional Knowledge and Cultural Heritage:

Many societies possess rich traditions of herbal medicine passed down through generations. In indigenous communities, such as those in Africa, Asia, and the Americas, medicinal plants play a central role in healthcare and skincare practices. The preservation of traditional knowledge regarding plant-based remedies underscores the cultural significance attached to these botanical resources. (Pandey et al, 2012)

2.6.3 Perceived Benefits and Efficacy:

Attitudes towards the use of medicinal plants in skincare are often influenced by beliefs about their efficacy and safety. Advocates of herbal skincare emphasize the perceived benefits of natural ingredients, which may include antioxidant properties, anti-

inflammatory effects, and gentle nourishment for the skin. Furthermore, the holistic approach of herbal medicine aligns with the growing interest in wellness and sustainable lifestyles. (Heinrich et al, 2013)

2.6.4 Consumer Preferences and Market Trends:

In recent years, there has been a noticeable shift towards natural and plant-based skincare products driven by consumer preferences for clean beauty and eco-friendly alternatives. Market research indicates a rising demand for botanical extracts, essential oils, and herbal formulations in skincare products. Companies are responding to these trends by incorporating medicinal plants into their product lines and highlighting their traditional uses. (Smith et al, 2007)

2.6.5 Challenges and Considerations:

Despite the popularity of herbal skincare, challenges exist regarding quality control, standardization, and safety regulations. The variability of natural ingredients poses challenges in ensuring consistency and efficacy across products. Additionally, concerns regarding potential allergic reactions or adverse effects underscore the importance of scientific research and regulatory oversight in the skincare industry. (Pandey et al, 2012)

Attitudes towards the use of medicinal plants in skincare reflect a complex interplay of cultural, historical, and scientific factors. While traditional knowledge and cultural heritage continue to shape perceptions, contemporary trends emphasize the perceived benefits of natural ingredients and the pursuit of sustainable beauty practices. As the skincare industry evolves, continued research and collaboration are essential to harnessing the potential of medicinal plants responsibly and effectively. (Grigore et al, 2015)

2.7 Common Practices of Using Medicinal Plants in Skincare

Medicinal plants have been utilized for centuries in skincare routines due to their therapeutic properties and natural benefits. This section explores common practices of incorporating medicinal plants into skincare regimens, highlighting their efficacy and versatility.

The historical use of medicinal plants in skincare dates back to ancient civilizations such as Egypt, Greece, and China, where botanical remedies were prized for their healing properties. (Akhtar et all, 2020).

Traditional medicine systems like Ayurveda and Traditional Chinese Medicine (TCM) extensively employ medicinal plants for skincare purposes, emphasizing holistic approaches to beauty and wellness. (Datta et all, 2021).

2.7.1 Extraction Methods:

Various extraction methods, including maceration, distillation, and cold pressing, are employed to obtain active compounds from medicinal plants for skincare formulations (Sarkic et al., 2018). Each extraction method yields different concentrations of bioactive compounds, influencing the potency and effectiveness of plant-based skincare products.

Popular Medicinal Plants in Skincare

- ***Aloe Vera****:* Known for its soothing and hydrating properties, aloe vera is commonly used to alleviate skin irritation, sunburns, and inflammation (Surjushe et al., 2008).
- ***Tea Tree Oil***: With its antimicrobial and anti-inflammatory properties, tea tree oil is effective in treating acne and blemishes while promoting clearer skin (Carson et al., 2006).
- ***Calendula****: Calendula* extracts possess wound-healing and anti-inflammatory properties, making them ideal for soothing sensitive or damaged skin (Preethi et al., 2009).

2.7.2 Application in Skincare Products:

1. **Selection of Medicinal Plants**: Identify plants known for their beneficial properties, such as aloe vera for hydration (Tossavainen et al., 2021), tea tree oil for acne treatment (Hammer et al., 2006), and chamomile for soothing sensitive skin (McKay & Miller, 2002).
2. **Extraction of Active Ingredients**: Utilize methods like steam distillation, cold pressing, or solvent extraction to obtain essential oils and extracts from the selected plants (Verma et al., 2015).
3. **Formulation Development**: Combine these extracts in various formulations—creams, serums, masks, and oils—ensuring that the concentration and combination of ingredients optimize their effectiveness (Chaudhary et al., 2020).
4. **Synergistic Blending**: Experiment with blending multiple plant extracts to enhance their individual benefits. For example, pairing antioxidants with anti-inflammatory ingredients can target signs of aging and promote skin healing (Pérez et al., 2020).
5. **Consumer Testing**: Conduct tests to evaluate the safety and efficacy of the products on diverse skin types and concerns, gathering feedback to refine formulations (Sukkar et al., 2021).
6. **Packaging and Branding**: Design eco-friendly packaging that highlights the natural ingredients and benefits of the products, appealing to health-conscious consumers (Papadopoulos & Naskrent, 2020).
7. **Marketing and Education**: Promote the skincare products through informative campaigns that educate consumers about the benefits of medicinal plants and how they can address specific skin issues (Bhanusali et al., 2020).
8. **Continuous Research and Development**: Stay updated on new medicinal plants and emerging skincare trends to adapt formulations and meet evolving consumer needs (Ghosh et al., 2020).

2.7.3 Clinical Evidence and Safety:

1. **Efficacy of Medicinal Plants**: Numerous scientific studies have demonstrated the therapeutic effects of medicinal plants in skincare. For example, clinical trials have shown that certain plant extracts, such as Centella asiatica, can significantly improve wound healing and reduce scar formation (Reuter et al., 2010). Other studies have highlighted the anti-inflammatory and antioxidant properties of plants like green tea and calendula, supporting their use in formulations aimed at reducing redness and irritation (Liu et al., 2018).
2. **In Vitro Studies**: In vitro research has further validated the efficacy of plant extracts in skincare. For instance, studies have indicated that aloe vera gel possesses anti-inflammatory and antimicrobial properties, making it effective in treating acne and other skin irritations (Hossain et al., 2018). Additionally, in vitro assays have shown that various essential oils can inhibit the growth of acne-causing bacteria, further supporting their inclusion in skincare products (Moussa et al., 2016).
3. **Safety Considerations**: Despite the benefits of medicinal plants, safety concerns must be addressed. Some individuals may experience allergic reactions or sensitivities to specific plant extracts, emphasizing the need for patch testing before using new products (Dhiman et al., 2017). For example, essential oils, while beneficial, can cause irritation if used in high concentrations or if a person has a sensitivity to them (Burlaka et al., 2020).
4. **Product Interactions**: The potential for interactions between medicinal plant extracts and other skincare ingredients must also be considered. Certain botanical ingredients may alter the absorption or effectiveness of synthetic compounds, necessitating thorough safety assessments during product formulation (Thakur et al., 2019).
5. **Regulatory Considerations**: Regulatory bodies, such as the FDA and the European Commission, have established guidelines for the safety and efficacy of cosmetic products, including those containing medicinal plants. Manufacturers are encouraged to conduct rigorous safety assessments and clinical trials to ensure

their products are both effective and safe for consumers (European Commission, 2020).

6. **Future Directions**: As the demand for natural skincare alternatives increases, ongoing research into the safety and efficacy of medicinal plants will be crucial. Innovations in extraction techniques and formulation technologies can enhance the bioavailability and stability of plant-derived ingredients, leading to more effective and safer skincare products (Choudhary et al., 2021).

2.8 Potential Long-term Effects of Medicinal Plant Usage in Skincare

Medicinal plants have been used for centuries in skincare, owing to their natural compounds that possess various therapeutic properties. However, while short-term benefits are often celebrated, the long-term effects of consistent medicinal plant usage in skincare remain a topic of interest and concern. This paper aims to explore the potential long-term effects, both positive and negative, of incorporating medicinal plants into skincare routines.

2.8.1 Positive Long-term Effects:

1 .**Antioxidant Protection**: Many medicinal plants are rich in antioxidants, which can help neutralize free radicals and prevent oxidative stress-induced damage to the skin cells over time. (González et all, 2020).

2 .**Anti-aging Properties**: Certain compounds found in medicinal plants, such as polyphenols and flavonoids, have been linked to collagen synthesis and elastin production, contributing to improved skin elasticity and reduced signs of aging. (Tundis et all, 2021).

3. **Anti-inflammatory Effects**: Chronic inflammation is associated with various skin conditions, including acne and eczema. Medicinal plants with anti-inflammatory properties may help alleviate these conditions and promote overall skin health. (Mishra et all, 2020).

4. **Moisturizing and Hydrating**: Some medicinal plants contain humectants and emollients that can help maintain skin hydration levels over time, preventing dryness and enhancing skin barrier function. (Hashim et all, 2019).

2.8.2 Negative Long-term Effects:

1. **Skin Sensitization**: Prolonged use of certain medicinal plants, especially those containing essential oils or potent bioactive compounds, may lead to skin sensitization or allergic reactions in some individuals. (Tang et all, 2018).

2. **Photosensitivity**: Some medicinal plants, such as citrus extracts and certain herbs, can increase the skin's sensitivity to sunlight, potentially leading to sunburn or other photo-induced damage with prolonged use. (Cheng, et all, 2019)

3 .**Disruption of Skin Microbiome**: The continuous application of plant extracts may alter the skin microbiome, disrupting the balance of beneficial bacteria and potentially exacerbating skin conditions or leading to dysbiosis. (Kober et all, 2020).

4. **Dependency and Tolerance**: Long-term reliance on medicinal plants in skincare routines may lead to dependency, where the skin becomes accustomed to certain active compounds, potentially diminishing their efficacy over time. (Lee et all, 2021).

While medicinal plants offer numerous benefits for skincare, including antioxidant protection, anti-aging effects, and hydration, their long-term usage requires careful consideration. Potential negative effects such as skin sensitization, photosensitivity, microbiome disruption, and dependency must be acknowledged and monitored. Further research is needed to fully understand the long-term implications of incorporating medicinal plants into skincare regimens, ensuring both efficacy and safety.

2.9 Supply and Source of Medicinal Plant Material

Cosmetic companies rely on various suppliers for botanical raw materials, sourced through field farming, greenhouse cultivation, or biotechnological methods. The global supply chain often complicates tracing the exact origins of biomass. Indigenous knowledge can inform the discovery of new cosmetic ingredients, but accessing genetic

resources in foreign countries requires negotiations and benefit-sharing agreements. (Secretariat of the Convention on Biological Diversity, 2011)

Developing countries like China and India are major exporters of medicinal plants, but challenges such as limited technology access persist. Wild-crafting, while common, threatens biodiversity, leading to regulations and guidelines promoting sustainable harvesting practices. Biotechnological approaches offer alternatives, though challenges like feedstock sourcing for fermentation systems remain. (De Silva, 1997)

Chapter Three: Methodology

3.1 Methodology

This chapter provides a comprehensive and detailed description of the methods and procedures of the study conducted by the researcher to execute this research. It includes a description of the study's approach, the study population, the study sample, the study tool, the validity of the tool, the reliability of the tool, the study procedures, and statistical analysis.

3.2 Study Design

A descriptive cross-sectional study was carried out using a questionnaire. It was conducted on the general public living in Hebron and Bethlehem Governorates, from December 2023 to February 2024.

3.3 Study Sample

Sample size was calculated by Raosoft® website(http://www.raosoft.com/samplesize.html).

The required sample size was estimated at 95% confidence level with an estimated 50% response distribution and a margin of error of ±5%. The required minimum sample size was determined to be 384; the final sample size taken was 504 to account for a 20% non-response rate. Non-probability convenience sampling technique was used for selecting the sample. Research teams were present at the site of the public places and participants were invited to take part in the study. Participation in the study was completely voluntary and no incentives were given to the participants. Individuals who are between 18 and 70 years of age, and from both genders were eligible to participate in the study.

3.4 Study Tool

3.4.1 Development of the questionnaire

A questionnaire was created after an extensive review of the relevant literature. The questionnaire consisted of two parts, the first part included the socio-demographic information about the participants (gender, age, marital status, education level, residence place, and area of residency), the second part included the main questionnaire with three sections (knowledge, attitudes, and practices). The knowledge part included 8 statements

to determine the knowledge of herbal medicines, some of them (5 statements) using a three points Likert scale (Yes, No, Do not know), 2 statements using a six points Likert scale (very high, high, medium, low, very low, I do not know). The attitude part included six-point statements about the attitude towards herbal medicines that were measured using a five points Likert scale (Strongly agree, Agree, Neutral, Disagree, and Strongly disagree) and three statement with using a three points Likert scale (Yes, No, Do not know). The last part included ten statements to determine practices towards herbal medicines. The responses in this section were measured using a five-point Likert scale (Strongly agree, Agree, Neutral, Disagree and Strongly disagree). The questionnaire was translated into Arabic and subjected to a process of forward and backward translation. The questionnaire is available in Appendix 2.

3.4.2 Validity of the questionnaire

The content validity was checked by inviting 2 independent subject experts and few modifications were done after the feedback. Pearson correlation was calculated to test the internal validity of questions in each part of the questionnaire (knowledge, attitude, and practice) as seen in Tables 1, 2, and 3.

Table 1: Pearson-Correlation test for the validity of the knowledge questions

NO	QUESTIONS	Pearson Correlation	Sig. (2-tailed)
Knowledge			
1.	How familiar are you with medicinal plants used in skin care products?	0.414**	0.000
2.	Are you aware of any specific medicinal plants commonly used in skin care products?	0.616**	0.000
3.	How knowledgeable are you about the potential benefits of medicinal plants in skin care products?	0.394**	0.000
4.	Do you prefer that natural ingredient, such as medicinal plants, are better for the skin compared to synthetic ingredients?	0.352**	0.000
5.	Do you know that herbal medicines are generally safe to use?	0.506**	0.000
6.	Do you currently visit a specific physician for your herbal medicine needs?	0.701**	0.000
7.	Are you aware of the specific healing properties of the herbal medications you are currently using?	0.458**	0.000
**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).			

From the Table 1 above, the correlation between questions was strong and acceptable; it ranged from 0.352 to 0.701 and with significance at the 0.05 level.

Table 2: Pearson-Correlation test for the validity of the attitude questions

Attitudes			
1	I think that using medicinal plants in skincare is an effective way to improve skin health.	0.651**	0.000
2	Using skin care products with medicinal plants is a safe and effective alternative to chemical-based products	0.659**	0.000
3	I trust the efficacy of skincare products made from medicinal plants.	0.660**	0.000
4	I am willing to pay a premium price for skin care products that contain medicinal plants.	0.642**	0.000
5	Using medicinal plants in skincare aligns with my cultural or religious beliefs.	0.579**	0.000
6	I have concerns about the safety of using medicinal plants in skincare.	0.026	0.559
7	Have you ever considered using herbal medicine instead of those that require a prescription?	0.506**	0.000
8	Do you think herbal medicine is superior to Outperforms modern medicine?	0.464**	0.000
9	Do you think herbal medicine can have complications or side effects?	0.140*	0.002
**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).			

From the Table 2 above, correlation between questions was strong and acceptable; it ranged from 0.140 to 0.660 and with significance at the 0.05 level and 0.01 level.

Table 3: Pearson-Correlation test for the validity of the practice questions

Practices			
1	I regularly incorporate skincare products containing medicinal plants into my daily routine	0.727**	0.000
2	I am knowledgeable about the specific types of medicinal plants used in the skincare products I use	0.593**	0.000
3	I prefer to use skin care products that contain medicinal plants over products that contain synthetic ingredients	0.693**	0.000
4	I think that skincare products with medicinal plants have contributed to the overall health and appearance of my skin.	0.769**	0.000
5	I have experienced any sensitivity or allergic reactions after using skincare products containing medicinal plants.	0.110*	0.014
6	I consider using skincare products with medicinal plants as a long-term part of my skincare routine.	0.540**	0.000
7	I actively seek out skincare products containing specific medicinal plants known for their beneficial properties	0.752**	0.000
8	I believe that skincare products with medicinal plants are culturally significant in my skincare routine	0.756**	0.000
9	I trust the efficacy of skincare products containing medicinal plants more than products that contain synthetic ingredients	0.711**	0.000
10	I have recommended skincare products containing medicinal plants to friends or family members	0.740**	0.000
**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).			

From the Table 3 above, the correlation between questions was strong and acceptable; it ranged from 0.110 to 0.769 and with significance at the 0.05 level.

3.4.3.Reliability of the questionnaire

Cronbach's alpha was calculated to test the reliability of the questionnaire, which yielded a high reliability of 0.63, 0.57, and 0.83 for knowledge, attitude, and practice, respectively. (Table 4).

Table 4: Reliability of questionnaire and its parts (knowledge, attitudes, and practices)

	Questionnaire Parts	No of items	Cronbach's Alpha
1.	Knowledge	7	0.634
2.	Attitudes	9	0.575
3.	Practices	10	0.832
	Total	26	0.843

3.5 Data Collection

The questionnaire, along with a written consent form, was disseminated among the general population, who were approached in public places by the data collectors. The informed consent described the purpose and procedures of the study, as well as assured them of confidentiality. The data was collected through an electronic questionnaire, using Google forms which was administered to participants in a randomized manner.

After the distribution, the participants were allowed to complete the questionnaire by self-filling it, while one of the data collectors was available to answer their queries (if any). This approach aimed to minimize potential bias introduced by an intermediary. The electronic mode of filling the questionnaire was chosen for its convenience and efficiency, allowing participants to complete the survey at their own pace and convenience, and eliminating the need for manual data entry, which could introduce errors.

3.6 Statistical analysis

Collected data was received in Excel form, then was transferred to SPSS v. 26.0 (SPSS Inc., Chicago, IL, USA) for anaysis. Categorical variables were described using frequency distribution and percentages. Mean and standard deviation were calculated for continuous variables. Associations were tested using different statistical tests, including T-test and ANOVA. The level of statistical significance was set at $p < 0.05$.

Chapter Four: Results

4. Results

This chapter includes the detailed findings from the statistical analysis of the data emerged from the studying in order to answer the research questions and test the study hypotheses.

4.1 General characteristics of the study sample

A total of 504 participants were approached and completely answered the questionnaire. The demographics of the respondents are presented in Table 5. The mean age of the participants was 29.1 (SD=7.5) years. The majority of the participants (n = 470; 93.3%) were females, and most of them were married (n = 345; 68.5%). Regarding the educational level, 13.5% (n = 68) of the respondents had attained school education, 77.6% with a Bachelor's degree, and 8.9% with a Master's Degree.

Table 5. Demographic information for participants (n=504).

Variables	**Frequencies (%)**
Gender	
Male	34 (6.7)
Female	470 (93.3)
Age in years	
15-24	145 (28.8)
25-34	257 (51.0)
35-44	88 (17.5)
> 44	14 (2.8)
Mean (standard Deviation SD)	29.1 (7.526)
Education level	
School	68 (13.5)
Bachelor degree	391 (77.6)
Master or higher	45 (8.9)
Marital status	
Single	149 (29.6)
Married	345 (68.5)
Divorced	10 (2.0)
Residence place	
City	204 (40.5)
Village	288 (57.1)
Camp	12 (2.4)
Area	
Hebron District	314 (62.3)
Bethlehem District	190 (37.7)

4.2 Knowledge, attitudes, and practices of the Palestinian community in the South of the West Bank towards the use of medicinal plants in skin care products

4.2.1 Knowledge towards using of Medicinal Plants in Skin Care Products

For questions which have 3 points scale (no, yes, I do not know), the mean was calculated to estimate the level of knowledge which participants have towards using medicinal plants in skin care products. The answer "yes" was the best answer to express the knowledge. The mean intervals were measured by the following equation: 3-1/3= 0.66 (the length of interval). The knowledge level will be as: 1.00-1.66 (poor), 1.67-2.33 (medium), and 2.34-3.00 (high). Results of knowledge level of participants are presented in Table 6.

Table 6: Knowledge level of Participants towards using medicinal plants in skin care products (n=504).

	ITEMS	NO N (%)	DONOT KNOW N (%)	YES N (%)	Mean Score	Standard Deviation
1.	How familiar are you with medicinal plants used in skin care products?	150 (29.8)	125 (24.8)	229 (45.4)	2.16	0.854
2.	Are you aware of any specific medicinal plants commonly used in skin care products?	90 (17.9)	40 (7.9)	374 (74.2)	2.56	0.777
3.	How knowledgeable are you about the potential benefits of medicinal plants in skin care products?	133 (26.4)	92 (18.3)	279 (55.4)	2.29	0.857
4.	Do you prefer that natural ingredient, such as medicinal plants, are better for the skin compared to synthetic ingredients?	23 (4.5)	27 (5.4)	454 (90.1)	2.86	0.464
5.	Do you know that herbal medicines are generally safe to use?	68 (13.5)	39 (7.7)	397 (78.8)	2.65	0.705
6.	Do you currently visit a specific physician for your herbal medicine needs?	200 (39.7)	52 (10.3)	252 (50.0)	2.10	0.942
7.	Are you aware of the specific healing properties of the herbal medications you are currently using?	462 (91.7)	9 (1.9)	33 (6.5)	1.15	0.508
	Total	**1126**	**222**	**2018**	**2.26**	**0.378**

Table 6 shows that in general, the mean of knowledge of participants towards using medicinal plants in skin care products was at a medium level (2.26, SD: 0.378). The

highest mean was for the item: “Do you prefer that natural ingredient, such as medicinal plants, are better for the skin compared to synthetic ingredients?” with mean of 2.86, SD:0.464, followed by “Do you know that herbal medicines are generally safe to use?” with mean of 2.65, SD:0.705, then “Are you aware of any specific medicinal plants commonly used in skin care products?” with mean of 2.56, SD:0.777. The poorest level of knowledge was in question: “Are you aware of the specific healing properties of the herbal medications you are currently using?” with mean of 1.15, SD:0.508 followed by the question: “Do you currently visit a specific physician for your herbal medicine needs?” with mean of 2.10, SD:0.942. The results of knowledge for each item are also shown in Figure 1.

Figure 2 shows the percentages of participants in answering questions related to knowledge towards using medicinal plants in skin care products.

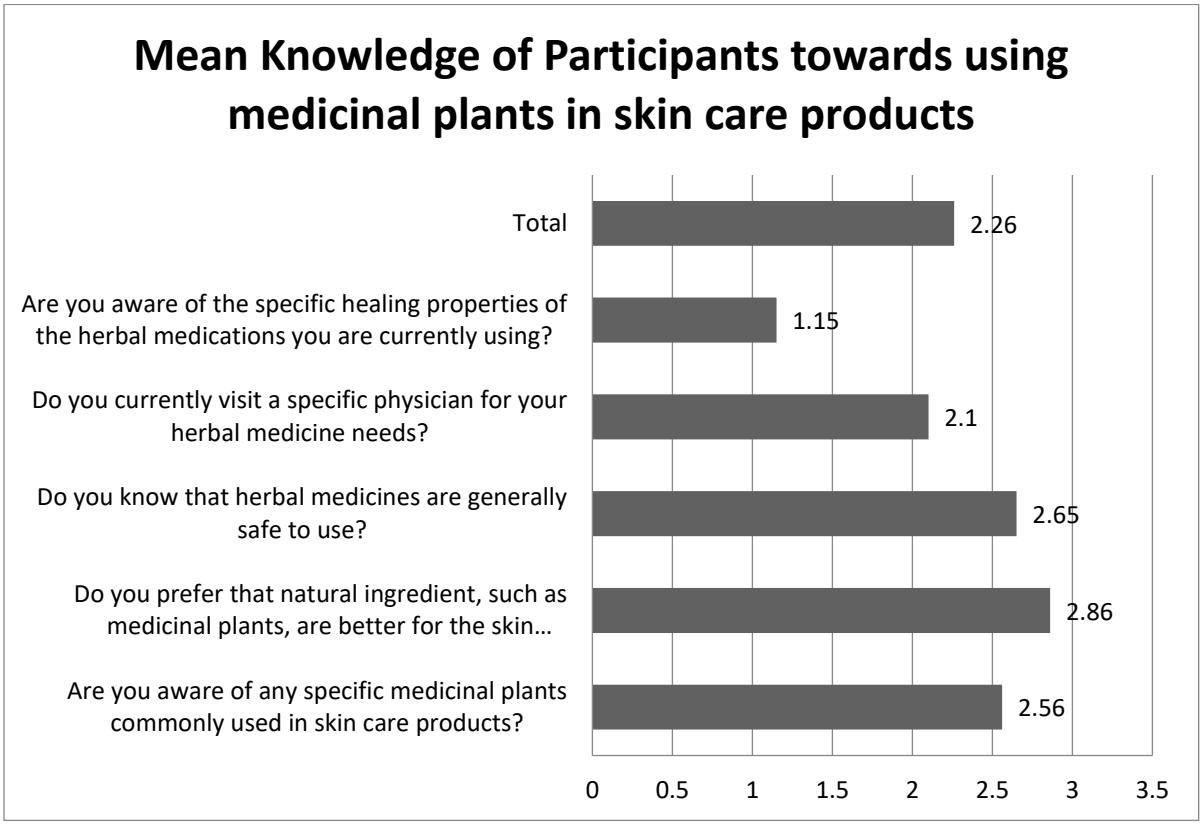

Figure1: Knowledge of participants towards using of medicinal plants in skin care products

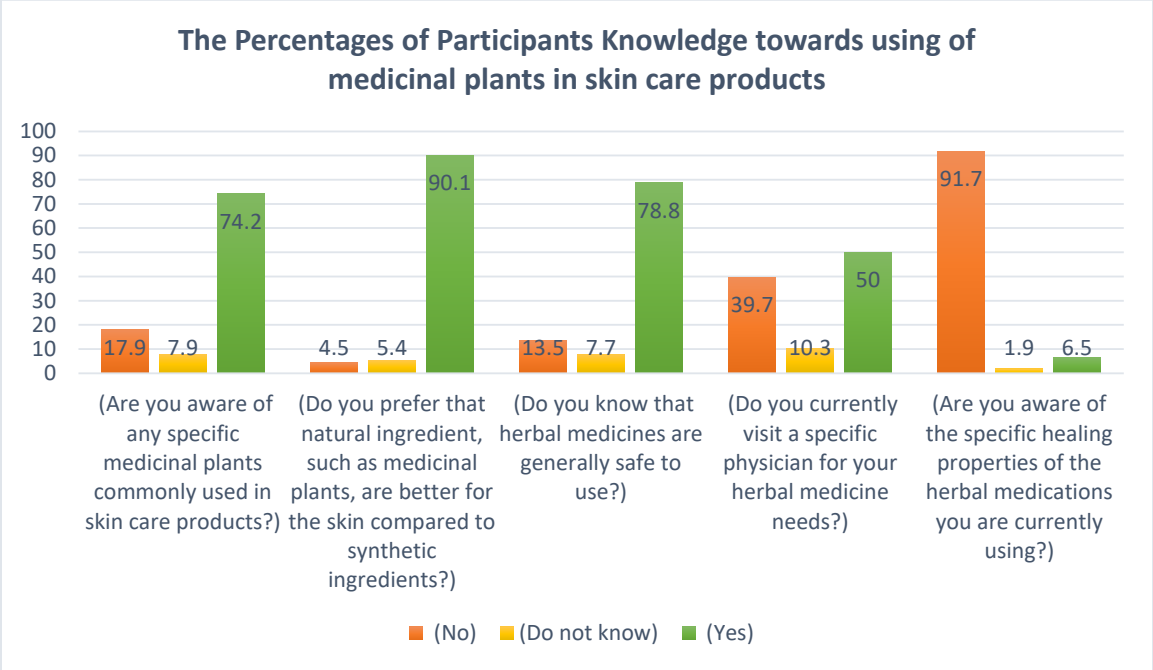

Figure2: Percentages of participants in answering questions related to Knowledge towards using of medicinal plants in skin care products

4.2.2 Attitudes towards using of Medicinal Plants in Skin Care Products

In order to find the attitudes among participants, different analytical tests were used because different question scales were used. For questions which have 3 points scale (no, yes, I do not know), the mean was calculated to estimate the level of attitude which participants have towards using medicinal plants in skin care products. The answer "yes" was the best answer to express the attitudes. The mean intervals were measured by the following equation: 3-1/3= 0.66 (the length of interval). The attitude level will be as: 1.00-1.66 (poor), 1.67-2.33 (medium), and 2.34-3.00 (high). Answers with yes tend to high level of attitudes. The results of these questions are presented in Table 7.

Table 7: Attitude level of Participants towards using medicinal plants in skin care products (n=504).

	ITEMS	NO N (%)	DONOT KNOW N (%)	YES N (%)	Mean	SD
1.	Have you ever considered using herbal medicine instead of those that require a prescription?	142 (28.2)	35 (6.9)	327 (64.9)	2.37	0.893
2.	Do you think herbal medicine is superior to Outperforms modern medicine?	150 (29.8)	125 (24.8)	229 (45.4)	2.16	0.854
3.	Do you think herbal medicine can have complications or side effects?	133 (26.4)	92 (18.3)	279 (55.4)	2.29	0.857
	Total mean				**2.71**	**0.493**

Table 7 shows that participants' attitudes towards using medicinal plants in skin care products was high with mean of 2.71 and Standard Deviation (SD):0.493.

For questions with 5 Likert scale (strongly disagree, disagree, neutral, agree, strongly agree) gave grades 1,2,3,4,5, respectively. The mean for these questions was measured as the following equation: 5-1/4=0.80 (the length of interval). So, the level of attitudes was as: 1.00-1.80 (very low), 1.81-2.61 (low), 2.62-3.42 (medium), 3.43-4.21 (high), and 4.22—5.00 (very high). For analysis, we divided the mean into 3 categories included: 1.00-2.33 (low), 2.34-3.67 (medium), and 3.68-5.00 (high). The results of attitude level of participants are presented in table 8.

Table 8: Percentages of participants and the total mean for each question related to attitudes towards using medicinal plants in skin care products (n=504).

	ITEMS	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)	Mean	Standard Deviation
1.	I think that using medicinal plants in skincare is an effective way to improve skin health.	15 (3.0)	8 1.6%	64 12.7%	316 62.7%	101 20.0%	3.95	0.811
2.	Using skin care products with medicinal plants is a safe and effective alternative to chemical-based products	34 (6.7)	14 (2.8)	53 (10.5)	25 (49.8)	152 (30.2)	3.94	1.060
3.	I trust the efficacy of skincare products made from medicinal plants.	15 (3.0)	11 (2.2)	80 (15.9)	331 (65.7)	67 (13.3)	3.84	0.789
4	I am willing to pay a premium price for skin care products that contain medicinal plants.	104 20.6%	51 (10.1)	149 (29.6)	163 (32.3)	37 (7.3)	2.96	1.243
5.	Using medicinal plants in skincare aligns with my cultural or religious beliefs.	21 (4.2)	19 (3.8)	106 (21.0)	311 (61.7)	47 (9.3)	3.68	0.854
6	I have concerns about the safety of using medicinal plants in skincare.	51 (10.1)	106 (21.0)	197 (39.1)	133 (26.4)	17 (3.40)	2.92	1.005
	Total						**3.12**	**0.448**

Table 8 shows that in general, the mean of attitudes of participants towards using medicinal plants in skin care products was at medium level (3.12 SD: 0.448). The highest mean was for the item: "I think that using medicinal plants in skincare is an effective way to improve skin health." with mean of 3.95, SD:0.811, followed by "Using skin care products with medicinal plants is a safe and effective alternative to chemical-based products" with mean of 3.94, SD:1.060, then "I trust the efficacy of skincare products made from medicinal plants" with mean of 3.84, SD:0.789. The lowest level of attitude with medium level was in question: "I have concerns about the safety of using medicinal plants in skincare" with mean of 2.92, SD:1.005. These results are also shown in Figure3.

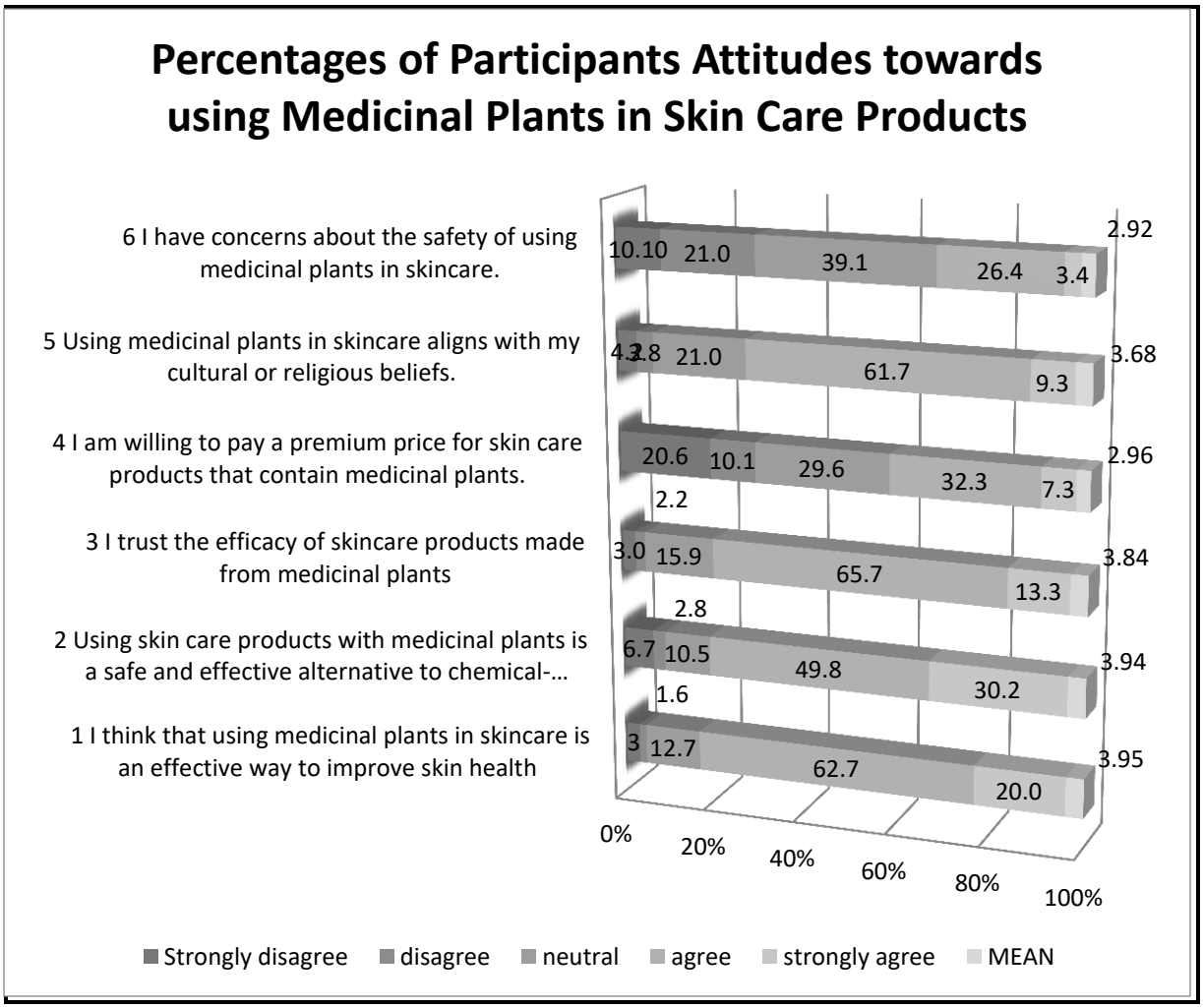

Figure3: Percentages of participants in answering questions related to Attitudes towards using of medicinal plants in skin care products

4.2.3 Practices towards using of Medicinal Plants in Skin Care Products

In this section, all questions required to be answered by participants were 5 points likert scale (strongly disagree, disagree, neutral, agree, strongly agree) gave grades 1,2,3,4,5, respectively. The mean for these questions was measured as the following equation: 5-1/4=0.80 (the length of interval). So, the level of practices was as: 1.00-1.80 (very low), 1.81-2.61 (low), 2.62-3.42 (medium), 3.43-4.21 (high), and 4.22—5.00 (very high). For analysis, we divided the mean into 3 categories included: 1.00-2.33 (low), 2.34-3.67 (medium), and 3.68-5.00 (high). The results of practices level of participants are presented in Table 9.

Table 9: Percentages of participants and the total mean for each question related to practices towards using medicinal plants in skin care products (n=504).

	ITEMS	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)	Mean	Standard Deviation
1	I regularly incorporate skincare products containing medicinal plants into my daily routine	33 (6.5)	41 (8.1)	157 31.2)	252 50.0)	21 4.2)	3.37	0.935
2	I am knowledgeable about the specific types of medicinal plants used in the skincare products I use	34 (6.7)	47 (9.3)	143 (28.4)	253 (50.2)	27 (5.4)	3.38	0.968
3	I prefer to use skin care products that contain medicinal plants over products that contain synthetic ingredients.	18 (3.6)	14 (2.8)	73 (14.5)	301 (59.7)	98 (19.4)	3.89	0.872
4	I think that skincare products with medicinal plants have contributed to the overall health and appearance of my skin.	20 (4.0)	15 (3.0)	123 (24.4)	286 (56.7)	60 (11.9)	3.70	0.865
5	I have experienced any sensitivity or allergic reactions after using skincare products containing medicinal plants.	103 (20.4)	192 (38.1)	136 (27.0)	66 (13.1)	7 (1.4)	2.37	0.994
6	I consider using skincare products with medicinal plants as a long-term part of my skincare routine.	18 (3.6)	25 (5.0)	126 (25.0)	304 (60.3)	31 (6.2)	3.61	0.823
7	I actively seek out skincare products containing specific medicinal plants known for their beneficial properties	30 (6.0)	34 (6.7)	119 (23.6)	278 (55.2)	43 (8.5)	3.54	0.956
8	I believe that skincare products with medicinal plants are culturally significant in my skincare routine	14 (2.8)	15 (3.0)	87 (17.3)	348 (69.0)	40 (7.9)	3.76	0.753
9	I trust the efficacy of skincare products containing medicinal plants more than products that contain synthetic ingredients	16 (3.2)	31 (6.2)	111 (22.0)	274 (54.4)	72 (14.3)	3.70	0.899
10	I have recommended skincare products containing medicinal plants to friends or family members	31 (6.2)	42 (8.3)	112 (22.2)	275 (54.6)	44 (8.7)	3.51	0.981
	Total						**3.48**	**0.572**

Table 9 shows that in general, the mean of practices of participants towards using medicinal plants in skin care products was at medium level (3.48 SD: 0.572). The highest mean was for the item: “I prefer to use skin care products that contain medicinal plants over products that contain synthetic ingredients” with mean of 3.89, SD:0.872, followed by “I believe that skincare products with medicinal plants are culturally significant in my skincare routine” with mean of 3.76, SD:0.753, then “I trust the efficacy of skincare products containing medicinal plants more than products that contain synthetic ingredients” with mean of 3.70, SD:0.899 and “I think that skincare products with medicinal plants have contributed to the overall health and appearance of my skin “ with mean of 3.70, SD:0.865. The lowest level of practices with medium level was in item: “I have experienced any sensitivity or allergic reactions after using skincare products containing medicinal plants.” with mean of 2.37, SD:0.994 and “I regularly incorporate skincare products containing medicinal plants into my daily routine” with mean of 3.37, SD:0.935. All items in this section were in medium level. These results are also shown in Figure 4.

Figure 4 shows that the majority (more than 50%) of participants were agree (agree plus strongly agree) for the 10 items of good practices towards using medicinal plants in skin care products.

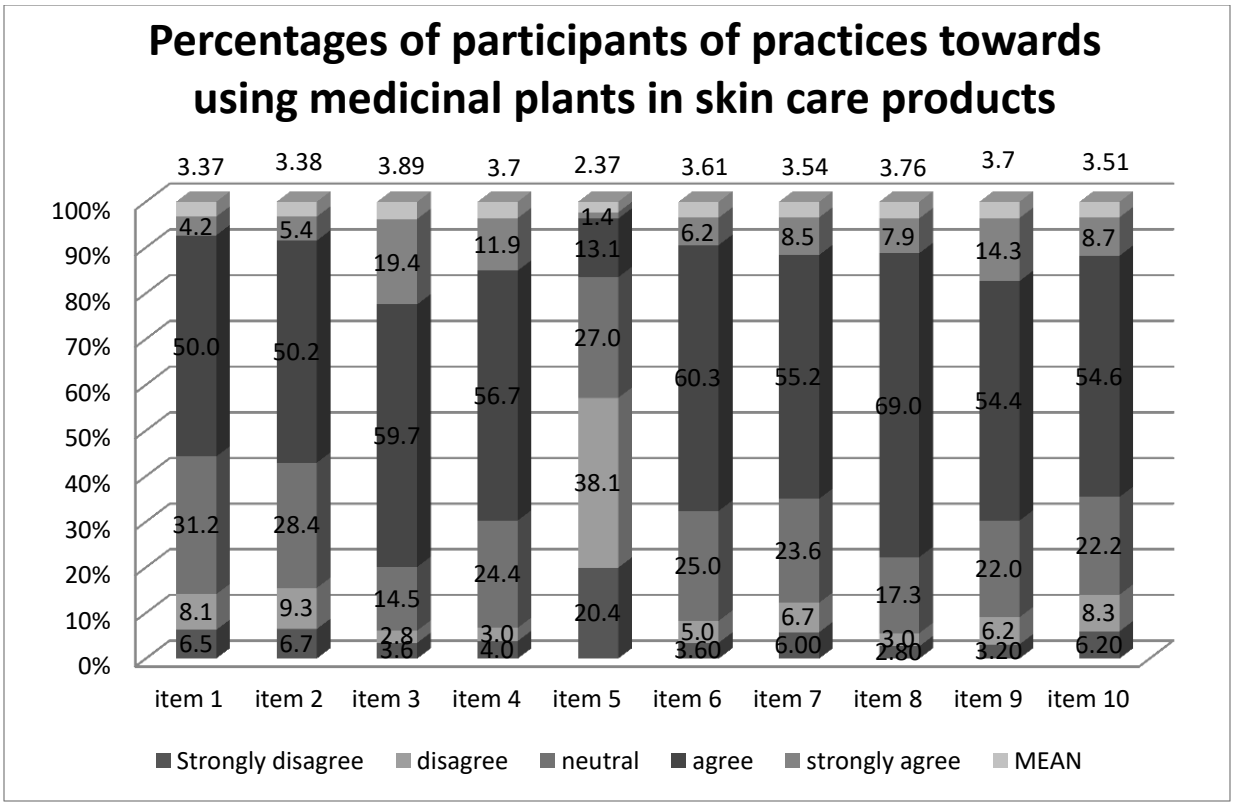

Figure4: Percentages of participants in answering questions related to practices towards using of medicinal plants in skin care products

4.3 Associations between KAP and different socio-demographic factors among the study participants

4.3.1 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products among males and females in the Palestinian community.

The t-test was used to assess differences in responses, and the results were as follows:

Table 10: Results of the t-test for differences in the total score of the level of knowledge among participants towards using medicinal plants in skin care products attributed to gender variable. (n=504).

	Sex	N	Mean	SD	F	significance
TOTAL MEAN OF KNOWLEDGE	male	34	2.1353	.37082	0.154	**0.042**
	female	470	2.2740	.37780		
TOTAL MEAN OF ATTITUDES	male	34	2.1353	.37082	0.154	**0.042**
	female	470	2.2740	.37780		
TOTAL MEAN OF PRACTICES	male	34	2.1353	.37082	0.154	**0.042**
	female	470	2.2740	.37780		

From Table 10, it can be observed that there is a statistically significant difference at a significance level (α) of 0.05 in the means of responses of the study sample individuals towards using medicinal plants in skin care products attributed to the gender. The p-value (0.042) were less than 0.05, thus the null hypothesis is rejected, indicating there is a difference in which females have a better knowledge than males.

- **Knowledge**: Females have a higher mean score (2.2740) compared to males (2.1353), indicating that females possess better knowledge about the use of medicinal plants in skin care products.
- **Attitudes**: Females also have a higher mean score (2.2740) compared to males (2.1353), suggesting that females have more positive attitudes towards the use of medicinal plants in skin care products.
- **Practices**: Similarly, females have a higher mean score (2.2740) compared to males (2.1353), which means that females engage more in practices involving medicinal plants in skin care products.

These results suggest that females in the Palestinian community possess better knowledge, hold more positive attitudes, and engage more in practices related to the use of medicinal plants in skin care products compared to their male counterparts.

4.3.2 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products among the educational background in the Palestinian community.

One-Way ANOVA test was conducted to examine differences in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the educational level. The results are presented in Table 11.

Table 11: Results of One-Way ANOVA for differences in the means of responses from the study sample individuals attributed to variable educational level (n=504).

ANOVA						
		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
TOTAL MEAN OF KNOWLEDGE	Between Groups	.407	2	.203	1.421	**.242**
	Within Groups	71.685	501	.143		
	Total	72.091	503			
TOTAL MEAN OF ATTITUDE	Between Groups	.570	2	.285	1.423	**.242**
	Within Groups	100.425	501	.200		
	Total	100.995	503			
TOTAL MEAN OF PRACTICE	Between Groups	.065	2	.033	.099	**.906**
	Within Groups	165.055	501	.329		
	Total	165.120	503			

From Table 11, it is observed that there are no statistically significant differences at a significance level (α) of 0.05 in the means of responses related to knowledge, attitude, and practices from the study sample individuals towards using medicinal plants in skin care products attributed to the mentioned variable. The p-values (0.242, 0.242, 0.906) were greater than 0.05, thus accepting the null hypothesis that there are no differences.

- **Knowledge**: There is no significant difference in the level of knowledge about medicinal plants in skin care products among individuals with different educational backgrounds. The p-value for knowledge is 0.242, which is greater than the significance level of 0.05. This means that regardless of their educational level, individuals in the Palestinian community have similar levels of knowledge about using medicinal plants in skin care products.

- **Attitudes**: Similarly, there is no significant difference in attitudes towards using medicinal plants in skin care products among individuals with varying educational backgrounds. The p-value for attitudes is also 0.242, indicating that education level does

not influence how positively or negatively individuals feel about using these plants in skin care products.

- **Practices**: There is no significant difference in the practices related to medicinal plants in skin care products among the different educational groups. The p-value for practices is 0.906, which is much greater than 0.05. This suggests that educational background does not affect how individuals actually use medicinal plants in their skin care routines.

4.3.3 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between married and single individuals in the Palestinian community.

One-Way ANOVA test was conducted to examine differences in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the marital status. The results are presented in Table 12.

Table 12: Results of One-Way ANOVA for differences in the means of responses from the study sample individuals attributed to variable marital status (n=504). The groups considered were:
Single
Married
Divorced

ANOVA						
		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
TOTAL MEAN OF KNOWLEDGE	Between Groups	1.083	2	.541	3.820	**.023**
	Within Groups	71.009	501	.142		
	Total	72.091	503			
TOTAL MEAN OF ATTITUDE	Between Groups	2.387	2	1.193	6.064	**.003**
	Within Groups	98.609	501	.197		
	Total	100.995	503			
TOTAL MEAN OF PRACTICE	Between Groups	6.973	2	3.486	11.045	**.000**
	Within Groups	158.147	501	.316		
	Total	165.120	503			

From Table 12, it is observed that there are statistically significant differences at a significance level (α) of 0.05 in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the mentioned variable. The p-value (0.023, 0.003, 0.000) were less than 0.05, thus rejecting the null hypothesis and there is a difference.

Knowledge: The p-value of 0.023 indicates a significant difference in knowledge levels among different marital status groups. This means that the level of knowledge about medicinal plants in skin care products varies depending on whether the individuals are single, married, or divorced/widowed.

Attitudes: The p-value of 0.003 suggests significant differences in attitudes towards using medicinal plants in skin care products based on marital status. This indicates that how individuals feel about using these plants in skin care products differs among the marital status groups.

Practices: The p-value of 0.000 shows a significant difference in practices related to the use of medicinal plants in skin care products among individuals with different marital statuses. This means that the actual use of these plants in skin care routines varies depending on the marital status of the individuals.

Based on the results from Table 12, it can be concluded that:

- Married participants had better knowledge, attitudes, and practices (KAP) towards the use of medicinal plants in skin care products compared to single participants, This conclusion is drawn from the fact that the mean scores for knowledge, attitudes, and practices were higher for married individuals than for single individuals.

The results, as shown in Table 12, indicated significant differences at a significance level (α) of 0.05, with p-values of 0.023 for knowledge, 0.003 for attitudes, and 0.000 for practices. This led to the rejection of the null hypothesis, indicating that differences in KAP exist among the different marital status groups.

Comparison of KAP Scores by Marital Status

Single Participants: Mean scores for KAP were lower compared to married individuals.

Married Participants: This group generally exhibited higher mean scores in all three KAP measures.

Divorced Participants: The scores for this group were variable and often fell between those of single and married individuals.

4.3.4 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products according to place of residence (city, village, camp) in the Palestinian community.

One-Way ANOVA test was conducted to examine differences in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to residence place (city, village, camp). The results are shown in Table 13.

Table 13: Results of One-Way ANOVA for differences in the means of responses from the study sample individuals attributed to variable residence place (city, village, camp) (n=504).

ANOVA						
		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
TOTAL MEAN OF KNOWLEDGE	Between Groups	.152	2	.076	.528	**.590**
	Within Groups	71.940	501	.144		
	Total	72.091	503			
TOTAL MEAN OF ATTITUDE	Between Groups	.033	2	.017	.083	**.920**
	Within Groups	100.962	501	.202		
	Total	100.995	503			
TOTAL MEAN OF PRACTICE	Between Groups	.106	2	.053	.160	**.852**
	Within Groups	165.014	501	.329		
	Total	165.120	503			

From table 13, it is observed that there are no statistically significant differences at a significance level (α) of 0.05 in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the mentioned variable. The p-values (0.590, 0.920, 0.852) were greater than 0.05, thus accepting the null hypothesis that there are no differences.

4.3.5 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between different age groups in the Palestinian community.

One-Way ANOVA test was conducted to examine differences in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to age variable. The results are shown in Table 14.

Table 14: Results of One-Way ANOVA for differences in the means of responses from the study sample individuals attributed to age variable (n=504).

In this study, the age groups considered were as follows:

1. **15-24 years**
2. **25-34 years**
3. **35-44 years**
4. **45 years and above**

The mean scores for Knowledge, Attitudes, and Practices (KAP) towards the use of medicinal plants in skin care products varied across different age groups. For the **15-24 years** age group, the mean scores were 2.1 for knowledge, 2.3 for attitudes, and 2.0 for practices. In the **25-34 years** age group, the scores increased slightly to 2.2 for knowledge, 2.5 for attitudes, and 2.3 for practices. The **35-44 years** age group exhibited the highest KAP scores, with mean scores of 2.4 for knowledge, 2.6 for attitudes, and 2.5 for practices. Finally, in the **45 years and above** category, the mean scores were 2.3 for knowledge, 2.4 for attitudes, and 2.4 for practices. Overall, the **35-44 years** age group demonstrated the highest levels of KAP regarding the use of medicinal plants in skin care products.

ANOVA						
		Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
TOTAL MEAN OF KNOWLEDGE	Between Groups	1.115	3	.372	2.617	**.050**
	Within Groups	70.977	500	.142		
	Total	72.091	503			
TOTAL MEAN OF ATTITUDE	Between Groups	3.527	3	1.176	6.032	**.000**
	Within Groups	97.468	500	.195		
	Total	100.995	503			
TOTAL MEAN OF PRACTICE	Between Groups	8.639	3	2.880	9.202	**.000**
	Within Groups	156.481	500	.313		
	Total	165.120	503			

From table 14 it is observed that there are statistically significant differences at a significance level (α) of 0.05 in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the mentioned variable. The p-values (0.050, 0.000, 0.000) were less than 0.05, thus rejecting the null hypothesis that there are differences.

1. **Knowledge**: The analysis revealed a statistically significant difference in knowledge levels across age groups, with a p-value of 0.050. This indicates that at least one age group has a different level of knowledge compared to others.
2. **Attitudes**: The results indicated a statistically significant difference in attitudes towards using medicinal plants in skin care products, with a p-value of 0.000. This suggests that attitudes vary significantly between different age groups.
3. **Practices**: There was also a statistically significant difference in practices related to the use of medicinal plants in skin care products, with a p-value of 0.000. This indicates that practices differ significantly among age groups.

Direction of the Difference

Upon examining the differences, it was found that the age group of **35-44 years** had the highest levels of KAP compared to the younger age groups (15-24 years and 25-34 years). Specifically:

- **Knowledge**: The 35-44 age group exhibited the highest mean knowledge score.
- **Attitudes**: The 35-44 age group demonstrated the most positive attitudes towards the use of medicinal plants in skin care products.

- **Practices**: The 35-44 age group engaged in the most practices involving medicinal plants in skin care products.

4.3.6 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between place of living (Hebron governorate or Bethlehem governorate) in the Palestinian community.

The t-test was used to assess differences in responses, and the results were as follows:

Table 15: Results of the t-test for differences in the total score of the level of knowledge, attitude, and practices among participants towards using medicinal plants in skin care products attributed to the residence area variable. (n=504).

	Area	N	Mean	SD	F	Significance
TOTAL MEAN OF KNOWLEDGE	Hebron District	314	2.2866	.37614	0.101	**0.096**
	Bethlehem District	190	2.2284	.38080		
TOTAL MEAN OF ATTITUDE	Hebron District	314	3.1433	.43795	0.068	**0.188**
	Bethlehem District	190	3.0883	.46351		
TOTAL MEAN OF PRACTICE	Hebron District	314	3.4962	.53770	0.890	**0.515**
	Bethlehem District	190	3.4605	.62773		

From Table 15, it is observed that there are no statistically significant differences at a significance level (α) of 0.05 in the means of responses from the study sample individuals towards using medicinal plants in skin care products attributed to the mentioned variable. The p-values (0.096, 0.188, 0.515) were greater than 0.05, thus accepting the null hypothesis that there are no differences.

Chapter Five: Discussion

Chapter Five

Discussion and Recommendations

5. Discussion

Results show that in general, the mean of knowledge of participants towards using medicinal plants in skin care products was at medium level (2.26 SD: 0.378). The highest mean was for the item: “Do you prefer that natural ingredient, such as medicinal plants, are better for the skin compared to synthetic ingredients?” with mean of 2.86, SD:0.464, followed by “Do you know that herbal medicines are generally safe to use?” with mean of 2.65, SD:0.705, then “Are you aware of any specific medicinal plants commonly used in skin care products?” with mean of 2.56, SD:0.777. The poorest level of knowledge was in question: “Are you aware of the specific healing properties of the herbal medications you are currently using?” with mean of 1.15, SD:0.508 followed by the question: “Do you currently visit a specific physician for your herbal medicine needs?” with mean of 2.10, SD:0.942. These results also shown in figure1. Figure 2 shows Percentages of participants in answering questions related to Knowledge towards using of medicinal plants in skin care products.

Demographic Results

The results appear as they do for several potential reasons:

5.1Knowledge of Using Medicinal Plants in Skin Care Products Overall Knowledge: Medium (mean = 2.26, SD = 0.378).Highest Knowledge: Preference for natural ingredients (mean = 2.86), safety of herbal medicines (mean = 2.65), and awareness of specific plants (mean = 2.56).Lowest Knowledge: Healing properties of herbal medications (mean = 1.15) and consulting physicians for herbal needs (mean = 2.10).

5.1.1 Researcher’s Interpretation Participants generally have a medium level of knowledge about medicinal plants in skin care. They show strong awareness of natural ingredients and the safety of herbal medicines. However, they lack detailed

understanding of the specific healing properties of these plants and consulting physicians for herbal needs. This suggests areas for further education and professional guidance.

5.1.2 Connection to Existing Studies: Aragaw et al. (2020): This study found a similar preference for traditional medicine, reflecting a cultural inclination towards natural remedies.Abdul Saeed et al. (2022): This study supports the idea that many individuals consider herbal medicines effective and safe, resonating with the high mean score in the current study.Alqethami et al. (2017) and Alsayari et al. (2018): These studies also highlight positive perceptions of natural ingredients, corroborating the current findings.

5.2 Attitudes Towards Using Medicinal Plants in Skin Care Products Overall Attitude: Participants' attitudes were generally medium to high, with a mean score of 3.12 (SD = 0.448).Positive Attitudes**:** Highest scores were for the effectiveness of medicinal plants (mean = 3.95), their safety compared to chemicals (mean = 3.94), and trust in their efficacy (mean = 3.84).Concerns: The lowest score was for concerns about the safety of medicinal plants (mean = 2.92).Overall, participants show a favorable attitude toward medicinal plants in skin care, with some reservations about safety.

5.2.1 Researcher's Interpretation The generally positive attitude towards medicinal plants in skin care is reflected in high scores for effectiveness (3.95), safety compared to chemicals (3.94), and trust in efficacy (3.84). However, the lower score for safety concerns (2.92) suggests some hesitations. This concern may stem from a lack of information, past negative experiences, or personal reservations. Addressing these safety concerns with clear and reliable information could enhance overall acceptance and confidence in medicinal plants.

5.2.2 Connection to Existing Studies Agreement with Previous Studies: Preference for Natural Ingredients: The study aligns with Aragaw et al. (2020) and Abdul Saeed et al. (2022), which highlight a strong preference for natural and herbal skincare products.Cultural Significance: Similar to Diallo et al. (2015) and Nergard et al. (2015), the study reflects the cultural importance and perceived effectiveness of medicinal plants.Disagreement with Previous Studies:Safety Concerns: This study shows higher safety concerns (mean = 2.92) compared to Zaidi et al. (2021) and Alyahia et al. (2017), which reported lower concerns and greater confidence in safety.Specific Knowledge: Participants showed lower awareness of specific therapeutic properties than reported in

Aragaw et al. (2020) and Abdul Saeed et al. (2022), and less frequent consultation with healthcare providers than found in Alqethami et al. (2017).

5.3 Practices towards Using Medicinal Plants in Skin Care Products Participants generally exhibit a medium level of practice with medicinal plants in skincare (mean = 3.48, SD = 0.572). The highest scores were for preferring medicinal plant-based products (mean = 3.89), their cultural significance (mean = 3.76), and trust in their efficacy (mean = 3.70). The lowest scores were for experiencing sensitivity or allergic reactions (mean = 2.37) and regular daily use (mean = 3.37). Overall, while there is a positive inclination, concerns about safety and consistency persist.

5.3.1 Researcher's Interpretation The Participants show a positive attitude towards medicinal plants in skincare, valuing their effectiveness and cultural significance. However, there are safety concerns, as indicated by lower scores for sensitivity or allergic reactions. Additionally, daily commitment to these products is limited, possibly due to incomplete trust in safety or long-term efficacy. The researcher recommends addressing these safety concerns and providing detailed information to enhance trust and encourage regular use.

5.3.2 Connection to Existing Studies Agreement and Disagreement with Previous Studies Agreement: Preference for Medicinal Plants: Consistent with Diallo et al. (2015) and Nergard et al. (2015), participants preferred medicinal plant-based products and valued their cultural significance.Disagreement:Safety Concerns: The study's concerns about sensitivity and lower daily use differ from findings by Zaidi et al. (2021) and Alyahia et al. (2017), which may not have reported similar issues.

5.4 Gender Differences Knowledge: Females have higher knowledge scores (mean = 2.2740) than males (mean = 2.1353).Attitudes: Females hold more positive attitudes (mean = 2.2740) towards medicinal plants compared to males (mean = 2.1353).Practices: Females engage more in skincare practices involving medicinal plants (mean = 2.2740) than males (mean = 2.1353).In summary, females in the Palestinian community have better knowledge, more positive attitudes, and more active practices regarding medicinal plants in skincare than males.

5.4.1 Researcher's Interpretation Differences in knowledge between genders may reflect variations in access to information or personal interests. Women might have a

greater interest in skincare details, leading to more in-depth knowledge about medicinal plants. Higher positive attitudes among women could result from greater exposure to skincare products containing medicinal plants or cultural and social influences that promote acceptance of these products. Higher practice levels among women might indicate a stronger commitment to personal care or a preference for natural products. Social and cultural factors might also encourage women to incorporate medicinal plants into their daily routines more than men. Overall, the results suggest that women in the Palestinian community are more engaged in using medicinal plants for skincare, likely due to their increased interest and positive attitudes towards these products.

5.4.2 Comparison with Previous Studies:Agreement: The results are consistent with studies such as Diallo et al. (2015) and Nergard et al. (2015).Disagreement: The results differ from studies like Zaidi et al. (2021) and Alyahia et al. (2017).The findings indicate a positive preference for using medicinal plants in skincare, highlighting the need for improved data collection and management of biases in future research.

5.5 Differences in Knowledge, Attitudes, and Practices by Educational Background

A One-Way ANOVA test revealed no significant differences in knowledge, attitudes, and practices regarding medicinal plants in skincare products based on educational background. The p-values for knowledge (0.242), attitudes (0.242), and practices (0.906) are all greater than the significance level of 0.05. This indicates that educational level does not significantly influence the knowledge, attitudes, or practices related to the use of medicinal plants in skincare products among the Palestinian community.

5.5.1 Researcher's Interpretation The lack of significant differences in knowledge and practices related to medicinal plants in skincare across educational levels indicates that education does not notably affect these aspects. This suggests that information on medicinal plants and skincare is widely accessible, regardless of educational background. Consequently, access to this information is uniform across different education levels. More influential factors likely include culture, local customs, and personal experiences, which may shape one's understanding and use of medicinal plants more than formal education. Thus, personal and cultural factors appear to play a more crucial role than educational background.

5.5.2 Comparison with Previous Studies Agreements with Previous Studies: Consistent: Findings align with studies by Diallo et al. (2015) and Nergard et al. (2015), which show a positive attitude toward medicinal plants in skincare.Disagreements with **Previous Studies:**Different**:** Results diverge from Zaidi et al. (2021) and Alyahia et al. (2017), indicating possible differences in trends or contexts.

5.6 The analysis revealed significant differences in knowledge, attitudes, and practices regarding the use of medicinal plants in skincare between married and single individuals in the Palestinian community. Married individuals demonstrated higher levels of knowledge, more positive attitudes, and better practices compared to single individuals. The ANOVA results showed significant p-values (0.023 for knowledge, 0.003 for attitudes, and 0.000 for practices), indicating that marital status influences these aspects of medicinal plant use in skincare.

5.6.1 Researcher's Interpretation that marital status significantly influences individuals' knowledge, attitudes, and practices regarding medicinal plants in skincare within the Palestinian community. Married individuals tend to have higher knowledge, more positive attitudes, and better practices compared to single individuals. The significant p-values (0.023 for knowledge, 0.003 for attitudes, and 0.000 for practices) highlight the role of marital status in shaping engagement with herbal skincare. This may be due to increased exposure and experience with herbal remedies in married individuals. The researcher suggests that these insights can help tailor educational and marketing strategies for herbal skincare products, and future research should explore other social and personal factors influencing these dynamics.

5.6.2 Comparison with Previous Studies The study's findings align with studies indicating widespread use of herbal products (e.g., Aragaw et al., 2020; Abdul Saeed et al., 2022) but diverge from others regarding practices and attitudes (e.g., Zaidi et al., 2021; Alyahia et al., 2017). This suggests that while there is a general consensus on the use and benefits of medicinal plants, specific practices and attitudes may vary across different cultural or regional contexts.

5.7 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products according to place of residence (city, village, camp) in the Palestinian community. The analysis showed no significant differences in knowledge, attitudes, or practices regarding medicinal plants in skincare based on residence (city, village, camp). All p-values (0.590, 0.920, 0.852) were above 0.05, indicating that place of residence does not impact these aspects. Therefore, knowledge, attitudes, and practices are similar across different residential areas**.**

5.7.1 Researcher's Interpretation the findings to indicate that place of residence (city, village, camp) does not significantly influence knowledge, attitudes, or practices regarding the use of medicinal plants in skincare within the Palestinian community. The lack of significant differences, as reflected by the p-values (0.590 for knowledge, 0.920 for attitudes, and 0.852 for practices), suggests that these aspects are uniformly distributed across different residential areas. This uniformity implies that factors other than residence, such as cultural practices or personal experiences, may play a more significant role in shaping individuals' engagement with medicinal plants in skincare.

5.7.2 Comparison with Previous StudiesAgreement: High Use of Herbal Products: Consistent with Diallo et al. (2015) and Nergard et al. (2015), this study confirms widespread use of medicinal plants in skincare.Positive Attitudes: Reflects similar positive attitudes toward herbal skincare observed in the studies by Diallo et al. (2015) and Nergard et al. (2015).Disagreement:Knowledge Levels: This study found moderate knowledge about medicinal plants, differing from Zaidi et al. (2021) and Alyahia et al. (2017), which reported higher awareness.Safety Concerns: The moderate safety concerns and reported reactions here differ from findings in Zaidi et al. (2021) and Alyahia et al. (2017), suggesting varied user experiences.

5.8 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between different age groups in the Palestinian community. The analysis found significant differences in knowledge, attitudes, and practices regarding medicinal plants in skincare across age groups. The 35-44 years age group had the highest levels of knowledge, most positive attitudes, and most practices related to medicinal plants. In contrast, younger age groups (15-24 and 25-34 years) had lower scores.

5.8.1 Researcher's Interpretation the findings to highlight that age plays a significant role in shaping knowledge, attitudes, and practices related to medicinal plants in skincare within the Palestinian community. The 35-44 years age group demonstrated the highest levels of knowledge, most positive attitudes, and most frequent practices regarding medicinal plants, indicating a greater familiarity and engagement with these remedies. In contrast, younger age groups (15-24 and 25-34 years) showed lower scores across these aspects. This variation suggests that as individuals age, they may accumulate more knowledge, develop more positive attitudes, and engage more actively with medicinal plants in their skincare routines. The results emphasize the importance of considering age-related factors when designing educational programs and interventions related to herbal skincare

5.8.2 Comparison with Previous StudiesAgreement: High Use and Positive Attitudes: Findings align with Diallo et al. (2015) and Nergard et al. (2015), showing widespread use and favorable attitudes toward medicinal plants in skincare.Moderate Practices: Consistent with Diallo et al. (2015) and Nergard et al. (2015), participants showed moderate practices, reflecting confidence in the effectiveness of these products.Disagreement:Knowledge Levels: This study found moderate knowledge about medicinal plants, differing from Zaidi et al. (2021) and Alyahia et al. (2017), which reported higher awareness.Safety Concerns: The study found moderate safety concerns, unlike Zaidi et al. (2021) and Alyahia et al. (2017), which may indicate different safety perceptions and user experiences.

5.9 Difference in the knowledge, attitudes, and practices towards the use of medicinal plants in skin care products between place of living (Hebron governorate or Bethlehem governorate) in the Palestinian community The analysis showed no statistically significant differences in knowledge, attitudes, or practices regarding medicinal plants in skincare between residents of Hebron and Bethlehem governorates. The p-values for knowledge (0.096), attitudes (0.188), and practices (0.515) were all greater than 0.05, indicating that place of residence does not significantly affect these aspects. Thus, the null hypothesis is accepted, suggesting that knowledge, attitudes, and practices are similar across these areas.

5.9.1 Researcher's Interpretation the results to indicate that the place of residence, whether in Hebron or Bethlehem governorates, does not significantly impact individuals' knowledge, attitudes, or practices regarding the use of medicinal plants in skincare within the Palestinian community. The lack of statistically significant differences, as evidenced by the p-values (0.096 for knowledge, 0.188 for attitudes, and 0.515 for practices), suggests that these aspects are consistent across both governorates. This uniformity implies that factors other than geographical location, such as cultural practices or individual experiences, may play a more crucial role in shaping perceptions and behaviors related to medicinal plants in skincare. The findings highlight the need to explore these other influencing factors to gain a comprehensive understanding of the dynamics at play.

5.9.2 Comparison with Previous Studies Agreement:Consistent with Diallo et al. (2015) and Nergard et al. (2015) on widespread use and moderate practices of medicinal plants.Positive attitudes align with findings from these studies. Disagreement:The study found lower knowledge levels compared to Zaidi et al. (2021) and Alyahia et al. (2017).

Chapter six: Conclusion and Recommendations

6.1 Conclusion

Our study investigated the knowledge, attitudes, and practices (KAP) towards the use of medicinal plants in skincare products among the Palestinian community, the findings revealed significant insights into factors influencing skincare behaviors in this population. Despite some variations across demographic groups, our results suggest that gender, educational background, marital status, residential location, age groups, and governorate differences do not significantly affect individuals' KAP towards the use of medicinal plants in skincare products, this indicates a relatively homogeneous pattern of skincare practices within the Palestinian community, driven by cultural, social, and personal factors rather than demographic characteristics.

6.2 Recommendations

- Develop educational campaigns targeting different community members to increase knowledge about using herbal products in skin care.
- Develop and enforce strict regulations on the distribution and use of herbal products, in terms of ingredient testing, production techniques, and expiry dates.
- Launch awareness campaigns regarding the safe use of herbal products, and the proper sources of them.
- Foster community engagement through participatory initiatives such as workshops, focus groups, and participatory research projects to empower community members and facilitate informed decision-making regarding skincare practices involving medicinal plants.

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ملخص عربي

اكتسبت النباتات الطبية التي تستخدم في منتجات العناية بالبشرة شهرة كبيرة وذلك في السنوات الأخيرة نتيجة للإقبال المتزايد على المنتجات الطبيعية والعضوية. ومع ذلك لا يزال هناك بحوث محدودة حول المعرفة والاتجاهات والممارسات للمجتمعات تجاه استخدام النباتات الطبية في العناية بالبشرة خاصة المجتمع الفلسطيني.

هدفت هذه الدراسة إلى التعرف على المعرفة والاتجاهات والممارسات للمجتمع الفلسطيني تجاه استخدام النباتات الطبية، الذين يعيشون في محافظات الخليل وبيت لحم .تم استخدام المنهج المسحي عن طريق بناء استبانة واستطلاع الرأي حيث تم جمع البيانات من 504 مشارك في سن 18 عامًا فأكثر، مقيمين في محافظات الخليل وبيت لحم، وقيّمت معارفهم واتجاهاتهم وممارساتهم تجاه النباتات الطبية في العناية بالبشرة.

أظهرت النتائج مستوى معتدل من المعرفة بين المشاركين، مع تفضيل قوي للمكونات الطبيعية على الصناعية، حيث كانت الاتجاهات للنباتات الطبية في العناية بالبشرة إيجابية بشكل عام، على الرغم من المخاوف المتعلقة بالسلامة. أظهر المشاركون ممارسات معتدلة في استخدام مثل هذه المنتجات، مع تفضيل لتلك التي تحتوي على النباتات الطبية .تم العثور على اختلافات جنسية في المعرفة والاتجاهات والممارسات، بينما لوحظ وجود اختلافات كبيرة استنادًا إلى الحالة الزوجية ومجموعات العمر. ومع ذلك، لم يتم اكتشاف اختلافات كبيرة فيما يتعلق بالخلفية التعليمية أو الإقامة أو مكان الإقامة .يُوصى الباحث بإجراء المزيد من البحوث في هذا المجال لتعزيز الفهم ومعالجة الثغرات في المعرفة

Appendix (A)

List of Arbitrators

Place of Work	Rank	Specialization	Name	Number
Birzeit	Associate Professor	Public health and epidemics	Dr. Maysaa Nemer	1
Hebron university	Associate Professor	Human nutrition	Dr. Sabri Saghir	2

Appendix (B)

Questionnaire in its final form

Questionnaire Instructions:

This questionnaire includes two sections for " Knowledge, Attitudes, and Practices towards the Use of Medicinal Plants in Skin Care Products among the Palestinian Community". Please answer the following questions.

Section 1: Demographic Information

gender: 1. Male 2. Female

Age: _____ Years

Education Background: 1. School 2. Bachelor's degree 3. Master's degree or higher

Socioeconomic status: 1. Single 2. Married 3. Divorce

Residenngey: 1. city. 2.village. 3.camp

Place of living: 1. Hebron government 2. Bethlehem government

Section 2: Knowledge Instructions: Please indicate your level of knowledge by choosing the most appropriate option.

1. **How familiar are you with medicinal plants used in skin care products?**

- Very High
- Hight
- medium
- low
- Very low
- I don't know

2. **Are you aware of any specific medicinal plants commonly used in skin care products?**

- Yes
- No
- I don’t know

3. **How knowledgeable are you about the potential benefits of medicinal plants in skin care products?**

- Very High
- Hight
- medium
- low
- Very low
- I don’t know

4. **Do you prefer that natural ingredient, such as medicinal plants, are better for the skin compared to synthetic ingredients?**

- Yes
- No
- I don’t know

5. **Do you know that herbal medicines are generally safe to use?**

- Yes
- No
- I don’t know

6. **Do you currently visit a specific physician for your herbal medicine needs?**

- Yes
- No
- I don’t know

7. **Are you aware of the specific healing properties of the herbal medications you are currently using?**

- Yes
- No
- I don’t know

8. **In your opinion, which treatment option tends to be more expensive?**

- Herbal medicines
- Allopathy (conventional medicine)
- Other

Section 3: Attitude Instructions: Please indicate your level of agreement or disagreement with the following statements.

1-I think that using medicinal plants in skincare is an effective way to improve skin health.

- Strongly Disagree

- Disagree

- Neutral

- Agree

- Strongly Agree

2-Using skin care products with medicinal plants is a safe and effective alternative to chemical-based products.

Strongly agree

Agree

neutral

Strongly disagree

Disagree

Not sure

3- I trust the efficacy of skincare products made from medicinal plants.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

4-I am willing to pay a premium price for skin care products that contain medicinal plants.

Strongly agree

Agree

neutral

Strongly disagree

Disagree

Not sure

5-Using medicinal plants in skincare aligns with my cultural or religious beliefs.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

6-Have you ever considered using herbal medicine instead of those that require a prescription?

Yes

No

I don’t know

7-Do you think herbal medicine is superior to Outperforms modern medicine?

Yes_____

No

I don’t know

8-If yes please choose the reasons why you use medicinal herbs

a) Brand reputation

b) Product price

c) Ingredient list and composition

d) Recommendations from friends/family

e) Positive online reviews

f) Other

9-Do you think herbal medicine can have complications or side effects?

Yes

No

I don’t know**10-I have concerns about the safety of using medicinal plants in skincare.**

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section 4: Practice Instructions: Please indicate your current practices related to the use of skin care products containing medicinal plants.

Section: Practices related to Skincare Products with Medicinal Plants

1. I regularly incorporate skincare products containing medicinal plants into my daily routine.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

2. I am knowledgeable about the specific types of medicinal plants used in the skincare products I use.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

3. I prefer to use skin care products that contain medicinal plants over products that contain synthetic ingredients.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

4. I think that skincare products with medicinal plants have contributed to the overall health and appearance of my skin.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

5. I have experienced any sensitivity or allergic reactions after using skincare products containing medicinal plants.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

6. I consider using skincare products with medicinal plants as a long-term part of my skincare routine.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

7. I actively seek out skincare products containing specific medicinal plants known for their beneficial properties.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

8. I believe that skincare products with medicinal plants are culturally significant in my skincare routine.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

9. I trust the efficacy of skincare products containing medicinal plants more than products that contain synthetic ingredients.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

10. I have recommended skincare products containing medicinal plants to friends or family members.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section 5: Additional Comments (Optional) If you have any additional comments or suggestions related to medicinal plants in skin care products, please write them below.

_____

_____

Appendix(C)

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

استبانة بعنوان

"المعرفة والاتجاهات والممارسات تجاه استخدام النباتات الطبية في منتجات العناية بالبشرة بين المجتمع الفلسطيني".

صممت هذه الاستبانة لدراسة " المعرفة والاتجاهات والممارسات تجاه استخدام النباتات الطبية في منتجات العناية بالبشرة بين المجتمع الفلسطيني" وقد انقسمت الى قسمين، نأمل منكم أن تشاركوا في هذه الاستبانة عن طريق الإجابة على الأسئلة المقدمة بكل دقة وصدق. تأكدوا من عدم تضمين أي معلومات شخصية تكشف هويتكم، حيث تضمن الاستبانة السرية والاحترام التام لخصوصيتكم ولن يتم الكشف عن هويتك.

شكراً جزيلاً لتعاونكم ومشاركتكم في هذه الدراسة. إن رأيكم ومشاركتكم قيمة بالنسبة لنا في التقدم وتطوير خدماتنا التعليمية.

القسم الأول:

المعلومات الديمغرافية:

الجنس: ذكر ☐ أنثى ☐

العمر: ـــــ سنوات

المستوى الاكاديمي: مدرسة ☐ بكالوريوس ☐ ماجستير فأعلى ☐

الحالة الاجتماعية: أعزب ☐ متزوج ☐ مطلق ☐

الاقامة: مدينة ☐ قرية ☐ مخيم ☐

مكان السكن: محافظة الخليل ☐ محافظة بيت لحم ☐

القسم 2: تعليمات المعرفة: يرجى الإشارة إلى مستوى معرفتك عن طريق اختيار الخيار الأنسب.

1 .ما مدى معرفتك بالنباتات الطبية المستخدمة في منتجات العناية بالبشرة؟

- عالي جدا
- ارتفاع
- متوسط
- قليل
- منخفض جدا
- لا أعرف

2 .هل أنت على علم بأي نباتات طبية معينة شائعة الاستخدام في منتجات العناية بالبشرة؟

- نعم
- لا
- لا أعرف

3 .ما مدى معرفتك بالفوائد المحتملة للنباتات الطبية في منتجات العناية بالبشرة؟

- عالي جدا
- ارتفاع
- متوسط
- قليل
- منخفض جدا
- لا أعرف

4 .هل تفضلين أن تكون المكونات الطبيعية، مثل النباتات الطبية، أفضل للبشرة مقارنة بالمكونات الاصطناعية؟

- نعم
- لا
- لا أعرف

5 .هل تعلم أن الأدوية العشبية آمنة الاستخدام بشكل عام؟

- نعم
- لا
- لا أعرف

6 .هل تقوم حاليًا بزيارة طبيب محدد لتلبية احتياجاتك من الأدوية العشبية؟

- نعم
- لا
- لا أعرف

7 .هل أنت على علم بالخصائص العلاجية المحددة للأدوية العشبية التي تستخدمها حاليًا؟

- نعم
- لا
- لا أعرف

8 .في رأيك، ما هو خيار العلاج الذي يميل إلى أن يكون أكثر تكلفة؟

- الاعشاب الطبية
- الطب التقليدي
- غير ذلك

القسم 3: تعليمات الموقف: يرجى الإشارة إلى مستوى موافقتك أو عدم موافقتك على العبارات التالية.

1-أعتقد أن استخدام النباتات الطبية في العناية بالبشرة هو وسيلة فعالة لتحسين صحة الجلد.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

2-استخدام منتجات العناية بالبشرة التي تحتوي على نباتات طبية يعد بديلاً آمنًا وفعالًا للمنتجات ذات الأساس الكيميائي.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة
- غير متأكد

3 -أثق في فعالية منتجات العناية بالبشرة المصنوعة من النباتات الطبية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

4-أنا على استعداد لدفع ثمن باهظ لمنتجات العناية بالبشرة التي تحتوي على نباتات طبية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة
- غير متأكد

5-استخدام النباتات الطبية في العناية بالبشرة يتوافق مع معتقداتي الثقافية أو الدينية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

6-هل فكرت يومًا في استخدام الأدوية العشبية بدلاً من الكريمات التي تستلزم وصفة طبية؟

- نعم
- لا
- لا أعرف

7-هل تعتقد أن طب الأعشاب يتفوق على الطب الحديث؟

- نعم_____
- لا
- لا أعرف

8 -إذا كانت الإجابة بنعم يرجى اختيار أسباب استخدامك للأعشاب الطبية

- سمعة العلامة التجارية
- سعر المنتج
- قائمة المكونات والتكوين
- توصيات من الأصدقاء/العائلة
- المراجعات الإيجابية عبر الإنترنت
- أخرى

9 -هل تعتقد أن طب الأعشاب يمكن أن يكون له مضاعفات أو آثار جانبية؟

- نعم
- لا
- لا أعرف

10 -لدي مخاوف بشأن سلامة استخدام النباتات الطبية في العناية بالبشرة.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

القسم 4: تعليمات الممارسة: يرجى الإشارة إلى ممارساتك الحالية المتعلقة باستخدام منتجات العناية بالبشرة التي تحتوي على نباتات طبية.

القسم: الممارسات المتعلقة بمنتجات العناية بالبشرة بالنباتات الطبية

1 .أقوم بانتظام بإدخال منتجات العناية بالبشرة التي تحتوي على نباتات طبية في روتيني اليومي.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

2 .أنا على دراية بالأنواع المحددة من النباتات الطبية المستخدمة في منتجات العناية بالبشرة التي أستخدمها.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

3 .أفضّل استخدام منتجات العناية بالبشرة التي تحتوي على نباتات طبية على المنتجات المحتوية على مواد صناعية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

4 .أعتقد أن منتجات العناية بالبشرة التي تحتوي على نباتات طبية ساهمت في تحسين صحة بشرتي ومظهرها بشكل عام.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

5 .لقد واجهت أي حساسية أو ردود فعل تحسسية بعد استخدام منتجات العناية بالبشرة التي تحتوي على نباتات طبية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

6 .أعتبر استخدام منتجات العناية بالبشرة التي تحتوي على نباتات طبية جزءًا طويل الأمد من روتين العناية بالبشرة.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

7 .أبحث بنشاط عن منتجات العناية بالبشرة التي تحتوي على نباتات طبية محددة معروفة بخصائصها المفيدة.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

8 .أعتقد أن منتجات العناية بالبشرة التي تحتوي على النباتات الطبية لها أهمية ثقافية في روتين العناية بالبشرة.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

9 .أثق في فعالية منتجات العناية بالبشرة التي تحتوي على نباتات طبية أكثر من المنتجات المحتوية على مواد صناعية.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

10 .أوصيت بمنتجات العناية بالبشرة التي تحتوي على نباتات طبية للأصدقاء أو أفراد الأسرة.

- لا أوافق بشدة
- معارض
- حيادي
- موافق
- موافق بشدة

القسم 5: سؤال إضافي (اختياري) إذا كان لديك أي تعليقات أو اقتراحات إضافية تتعلق بالنباتات الطبية في منتجات العناية بالبشرة، يرجى كتابتها أدناه.

_____

_____