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Original article

Knowledge, Attitude, and Practice of Bee Venom Acupuncture Therapy Among Patients in West of Libya

Somaia Elsaedi[1], Amnnah Ahmed[1], Ahlam Mohamed[1], Ayat Omar[1], Shaima Aburas[1], Hajer Ali[1], Abdulrhman Akasha[2*]

[1]*Department of Pharmaceutical Technology, High Institute of Science and Medical Technology-Abu-Sleem, Tripoli, Libya.*
[2]*Department of Pharmaceutical Science, University of Tripoli Alhlia, Janzur, Libya.*
Corresponding Email. *akashaabdu@yahoo.co.uk*

Abstract
Apitherapy is an alternate therapy that relies on the usage of honeybee products, most importantly bee venom for the treatment of many human diseases. Bee venom contains several active molecules such as peptides and enzymes that have advantageous potential in treating inflammation and central nervous system diseases. Moreover, bee venom has shown promising benefits against different types of cancer as well as anti-viral activity. This study explores the effects and perceptions of bee venom therapy (BVT) among a selected population in Libya. The research primarily focuses on the demographics of individuals undergoing BVT, the frequency and types of symptoms experienced post-therapy, and the various conditions for which BVT is utilized. A cross-sectional descriptive study of 100 participants using a structured questionnaire on knowledge, attitude scale, and practice was done at three regions in Libya including Tripoli, Gerian & Yefran during Jun and July 2024. A randomized sample size that included a diverse age group and both genders. The data were presented as frequencies and percentages. Excel is used to enter and analyze the data. Results indicated a broad acceptance of BVT, with a majority of participants reporting symptomatic relief for various conditions such as muscular pain, back pain, and nerve-related issues. However, a significant portion of participants also reported common side effects such as swelling and localized pain. The study highlights the necessity for more extensive research to validate the efficacy of BVT and to better understand the long-term impacts and potential risks associated with the therapy.
Keywords. West Libya, Apitherapy, Bee Venom, Inflammation.

Introduction

Therapies involving the honeybee have existed for thousands of years and some may be as old as human medicine itself. Bee venom therapy was practiced in ancient Egypt, Greece, and China-three Great Civilizations known for their highly developed medical systems. Hippocrates, the Greek physician known as the "Father of Medicine", recognized the healing virtues of bee venom for treating arthritis and other joint problems. Among honeybees, *Apis mellifera* is the main species used for crop pollination in the world [1]. The usage of all bee products, including bee venom and honey, dates back thousands of years as their medicinal properties were cited in religious books like the Bible and the Quran [2-4]. Apitherapy is a branch of alternative medicine that relies on the usage of honeybee products that consists of honey, pollen, propolis, royal jelly, and mainly bee venom (BV), which is also known as apitoxin [5,6].

Bee venom therapy (BVT) is the medicinal application of BV from honeybees into the human body for the treatment of some diseases, such as rheumatism arthritis [7]. This strategy has been used in alternative medicine for more than 5000 years. It consists of either indirect application, by extracting BV with an electric stimulus followed by its injection into the body or directly via bee stings [8]. Bee venom is produced by female worker bees and is known to contain many active components including: (i) peptides like melittin, apamin, mast cell degranulation (MCD) peptide, and adolapin, (ii) enzymes, such as phospholipase A2 (PLA2) and hyaluronidase, and (iii) amino acids and volatile compounds. Interestingly, bee venom, in similarity to other animal venoms, has also shown beneficial anti-cancer and anti-viral potential against ovarian and prostate cancer, as well as HIV [9-12].

Bee venom is characterized by inducing allergic reactions following the sting. These reactions can take place in the skin, the respiratory track, the cardiovascular system, and the gastrointestinal system. Subsequently, severe anaphylactic shock could lead to cerebral or myocardial ischemia [13,14]. Honeybee venom is a transparent liquid dries up easily even at room temperature odorless, ornamental pungent smell, a bitter taste, hydrolytic blend of proteins with basic pH (4.5 to 5.5) that is used by bees for defense, it is considered a rich source of enzymes, peptides and biogenic amines, it is specific weight 1.1331 [15].

There are no official quality standards, since bee venom is not recognized as an official drug or as a food. Purity analysis may be carried out by quantitative analyses of some of its more stable or more easily measured components. Described standardization and quality control methods for purity and effectiveness of Hymenoptera venom, including honeybee venom [16]. This study explores the effects and perceptions of bee venom therapy (BVT) among a selected population in Libya.

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Methods

Study design

A cross-sectional was conducted by using a questionnaire. A total of 100 Participants were randomly approached by sending the questionnaire throughout three regions in west Libya including Tripoli, Gerian, and Yefran, over two months Jun and July 2024, to reach the highest number of participates in bee venom acupuncture therapy.

The study aims and objectives were described to the participants practicing BVT among a selected population in West Libya. The research primarily focuses on the demographics of individuals undergoing BVT, the frequency and types of symptoms experienced post-therapy, and the various conditions for which BVT is utilized.

Questionnaire distribution

The questionnaire was used to assess participants regarding BVT. The questionnaire contained 17 questions in five parts: sociodemographic, clinical diagnosis, knowledge, attitude, and practice. The first part included sociodemographic information, including gender, and age. The second part concerned the patients' clinical history (allergy and symptoms). The Third to fifth parts discussed the knowledge, practice, and attitude of participants towards BVT, whether they believed that it was effective and safe, whether they had heard about it, and from where they obtained such information. The attitude section reflected participants' viewpoints towards BVT, regarding how much they knew about it and their feelings towards its usage. The practice section asked the participants how they were receiving BVT: how long they had been using it, how many stings they received at once, place of stinging, administration of complementary bee sting with the administration period of three parts in compression with sociodemographic and clinical diagnosis parts of the questionnaire. Data were collected from participants. The questionnaire was edited and the final version was used in the current study.

Ethical approval

The questionnaire proposal was submitted to the Department of Pharmaceutical Technology High Institute of Science and Medical Technology/Abu-Sleem, Tripoli-Libya. The scientific committee gave this study questionnaire unconditional approval, granted the use of verbal consent, and gave this study an approval number: VB-01-K-012-2024 which complies with the Declaration.

Statistical analysis

The results were presented as frequencies and percentages. Excel is used to enter and analyze the data. Results were summarized using descriptive statistics.

Results and discussion

Our study100 participants, were predominantly female (59%), with a focus on bee sting therapy for general conditions. Most participants had experienced bee stings multiple times, with 70% previously stung. In comparison to Saudi Arabian Study 180 participants, were evenly distributed by gender (50% male, 50% female), focusing on rheumatoid arthritis (RA) and chronic diseases. The majority (60%) were aged 18–40, with high levels of university education (71.6%). The Saudi Arabian study involved a more balanced gender distribution and a higher proportion of participants with higher education. our study focused on bee sting experiences across a broader range of conditions, while the Saudi study concentrated on (RA) [17].

Table 1. Demographic characteristics, history and clinical data of the Participants.

The Question	**n (%)**
Gender	
Male	41 %
Female	59 %
Do you have any type of allergy?	
Yes	20 %
No	80 %
Have you been stung by a bee before?	
Yes	70 %
No	30 %
How old were you when you received your first bee sting treatment?	
Child	7 %
Teenager	14 %
Young person	47 %
Elderly person	32 %
How many stings have you been stung with before?	

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Once	18 %
Twice	10 %
Three times	11 %
More than 3 times	31 %
Did you develop any symptoms after the sting?	
Yes	81 %
No	19 %
Do you have any of these symptoms?	
Rash	76 %
Facial swelling	13 %
Nausea & vomiting	6 %
Tachycardia	5 %
Did you remove the bee stinger after the sting?	
Yes	57 %
No	43%
Did you visit the hospital after the previous symptoms?	
Yes	5 %
No	95 %
Which kind of treatment did you get?	
Home treatment	97 %
Antihistamine	3 %
How long did it take for the sting's symptoms to disappear?	
A day	19 %
Two days	34 %
Three days	27 %
More than that	20 %
On which sit did you get stung during the treatment?	
Arm	8 %
Face	22 %
Thigh	3 %
Other sits	67 %
What is the total number of stings you used daily?	
Once	15 %
Twice	30 %
Three times	30 %
More than 3 times	25 %
How difficult is it to treat using a bee sting?	
Easy	11 %
Middle	46 %
Difficult	27 %
Very difficult	16 %
When was the last time you got treated using a bee sting?	
A day ago	11 %
A week ago	34 %
A month ago	19 %
Six months ago	9 %
More than that	27 %
What medical conditions did you have to get treated for using a bee sting?	
Muscle cramps	18 %
Backache	7 %
Toothache	0 %

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Bell's palsy	13 %
Spinal disc herniation	10 %
Benign prostatic hyperplasia (BPH)	2 %
Other than that	51 %
Is the treatment center licensed?	
Yes	98 %
No	2 %

In our study Not explicitly assessed for knowledge. In comparison to Saudi Arabian Study, 55% demonstrated good knowledge of BVT, primarily through informal sources. Those with high school education showed better knowledge scores than university-educated participants. The Saudi study provided a quantitative measure of knowledge and highlighted demographic variations, while our study did not directly assess this parameter.

Our study's implicit attitudes can be inferred from the 81% of participants who reported symptoms after stings and the 95% who preferred home treatment over hospital visits. In comparison to Saudi Arabian study, 55% of participants exhibited a poor attitude toward BVT, citing cost and unavailability as primary barriers. Both studies suggest challenges in acceptance, though the Saudi study explicitly measured attitudes and identified socio-economic barriers, while our study focused more on practical outcomes.

Our study Bee sting therapy was commonly self-administered, with 97% opting for home treatment. Symptoms persisted for 2–3 days in most cases, and stings were administered primarily for muscle cramps and backache. In comparison, Saudi Arabian Study Practices were reported as poor, with 56% engaging in inconsistent or irregular BVT use. RA patients were more consistent with therapy and showed signs of improvement. our study participants favored informal, unlicensed practices, while the Saudi study emphasized clinical applications and highlighted variability in adherence to therapy protocols.

Our study targeted a variety of conditions, with 51% citing non-specific "other" medical issues. Licensed centers were available but minimally utilized (2% unlicensed) (Table 2). In contrast to Saudi Arabian Study focused on RA, with 80% of participants using prescribed medications alongside BVT. Emphasized the therapeutic potential of BVT for chronic inflammatory conditions. The Saudi study aligns BVT with RA management in a clinical framework, while our study demonstrates broader, non-specific usage.

This comparative framework can be used as a foundation for integrating our findings with those from the Saudi study, showcasing similarities, differences, and broader implications for BVT research and practice.

Table 2. Showed the licensed centers practice the apitherapy

Cases number	Center name	City
27	Alafia	Alhadba/Tripoli
3	Alharat	Aboselim/Tripoli
23	Donia	Aboselim/Tripoli
21	Alhadare	Souq Algoma
1	Souk Alkamise	Souk Alkamise
1	Tamem	Tripoli
20	Albalsem	Gerian
1	Sand	Gerian
1	Um algrsan	Yefren
2	At home	Yefren

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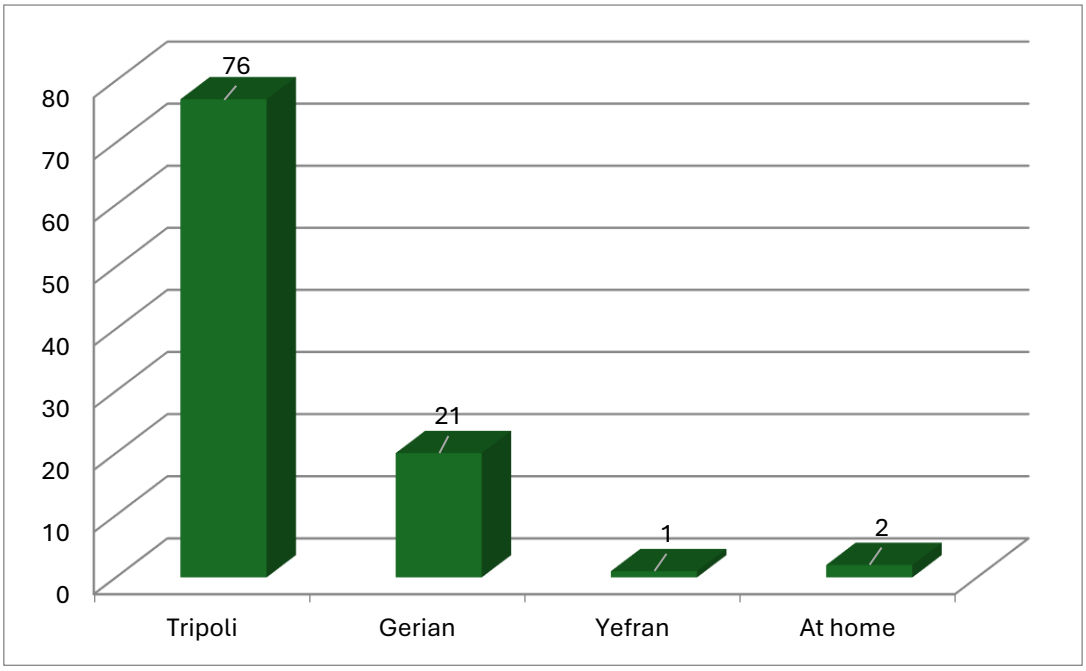

Figure 6. Demographic distribution of the Participants.

Conclusion

Bee venom therapy is a popular alternative treatment for certain medical conditions, especially among individuals who have previous experience with bee stings. The therapy seems to be relatively well-tolerated, with most individuals managing mild symptoms at home. Licensed centers play a crucial role in providing this therapy, and the treatment is used across a wide age range, with many participants beginning therapy in their young and adult ages. The majority of participants have moderate to strong reactions to the therapy, and some find it challenging due to the required frequency of injections. The findings suggest that while bee stings are common and typically managed at home, reactions can vary in severity, with some requiring medical attention. Bee venom therapy is used for various conditions, primarily administered in licensed centers. However, the level of difficulty and the potential risks highlight the need for careful administration and patient education.

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Conflicts of Interest

The author declares that they have no conflict of interest.

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المستخلص

العلاج بسم النحل هو علاج بديل يعتمد على استخدام منتجات نحل العسل، وأهمها سم النحل لعلاج العديد من الأمراض البشرية. يمكن إدخال السم إلى جسم الإنسان عن طريق الحقن اليدوي أو عن طريق لسعات النحل المباشرة. يحتوي سم النحل على العديد من الجزيئات النشطة مثل الببتيدات والإنزيمات التي لها إمكانات مفيدة في علاج الالتهابات وأمراض الجهاز العصبي المركزي، مثل مرض باركنسون ومرض الزهايمر والتصلب الجانبي الضموري. علاوة على ذلك، أظهر سم النحل فوائد واعدة ضد أنواع مختلفة من السرطان وكذلك النشاط المضاد للفيروسات، حتى ضد فيروس نقص المناعة البشرية (HIV). تستكشف هذه الدراسة آثار وتصورات العلاج بسم النحل بين مجموعة مختارة من السكان في ليبيا. يركز البحث في المقام الأول على التركيبة السكانية للأفراد الذين يخضعون للعلاج بسم النحل، وتواتر وأنواع الأعراض التي يعانون منها بعد العلاج، والظروف المختلفة التي يستخدم فيها العلاج بسم النحل. تم إجراء دراسة وصفية مقطعية لـ 100 مشارك باستخدام استبيان منظم حول مقياس المعرفة والموقف والممارسة في ثلاث مناطق في ليبيا بما في ذلك: طرابلس وجريان ويفرن خلال شهري يونيو ويوليو 2024. تم اختيار العينة عشوائيا حيث شملت مجموعة عمرية متنوعة وكلا الجنسين. تم تقديم البيانات على هيئة ترددات ونسب مئوية. تم استخدام برنامج Excel لإدخال البيانات وتحليلها. تم تلخيص النتائج باستخدام إحصائيات تشتيت الانتباه. أشارت النتائج إلى قبول واسع النطاق لـ BVT، حيث أفاد غالبية المشاركين بتخفيف الأعراض لحالات مختلفة مثل آلام العضلات وآلام الظهر والقضايا المتعلقة بالأعصاب. ومع ذلك، أفاد جزء كبير من المشاركين أيضًا عن آثار جانبية شائعة مثل التورم والألم الموضعي. تسلط الدراسة الضوء على ضرورة إجراء بحث أكثر شمولاً للتحقق من فعالية BVT وفهم التأثيرات طويلة المدى والمخاطر المحتملة المرتبطة بالعلاج بشكل أفضل.

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