



The Use of Medical Simulation in Cupping Therapy Training: A Novel Idea from the National Center for Complementary and Alternative Medicine

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Authors' contributions

This work was carried out in collaboration between all authors. Author TSA suggested the topic, and wrote the first draft of the manuscript. Authors MK and TSA managed the literature searches. Author NAQ reviewed the manuscripts comprehensively multiple times. All authors read and approved the final manuscript.

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ABSTRACT

Simulation has been successfully used since antiquity in medicine, especially for life support training programs. Part-task trainers allow trainees to acquire primary professional skills in a safe environment rather than to be trained for the first time on human beings. Cupping therapy is a traditional modality used to benefit humankind since 1550 B.C and mentioned in the famous Egyptian *Ebers Papyrus*. In Saudi Arabia, the National Center for Complementary and Alternative Medicine (NCCAM) in the Ministry of Health made pre-licensed cupping training a mandatory requirement for licensing the practice of wet/dry cupping. There is also a demand for standardization of ancient healing methods like cupping therapy to reduce its side effects and to help traditional medicine integration with modern medicine. Therefore, NCCAM developed a novel idea for cupping training. In the pre-licensed cupping training course provided by NCCAM, our

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research team found a novel method by using artificial skin for part task-trainer simulation in cupping training field. It will help in developing both trainees' clinical skills, and providing prolonged clinical training hours without stress or any harm that can happen to the volunteers undergoing wet or dry cupping. The NCCAM cupping simulation uses skin model surgical sutured skills training module, brand and Model Number: 45345. Ultimately artificial skin use helps trainees effectively apply cups and use surgical blades in a realistic clinical scenario. Using artificial skin in Complementary and Integrative Medicine training will help cupping trainers by improving and standardizing training programs and allow for safe practice of integrative healthcare. This paper is calls for pre- and post-training design studies to evaluating trainees' knowledge, attitude, practice, satisfaction, and improved skills in the use of Part-task trainer in cupping therapy training.

Keywords: Manikins; cupping simulation training; cupping therapy; complementary and alternative medicine.

1. INTRODUCTION

Simulation has been used successfully since antiquity in medicine [1], especially for life support training programs [2]. Part-task trainers allow trainees to acquire primary professional skills in a safe environment rather than to be trained for the first time on human beings [3]. Skin simulators have been used for many years in surgical training courses as a preliminary step to acquire basic surgical and dermatological procedures [4].

Cupping therapy is a traditional modality used to benefit humankind since 1550 B.C and mentioned in the famous Egyptian *Ebers Papyrus* [5]. It is widely used in Asia, Middle East, and Europe [5]. It is one of the leading traditional therapies in Saudi Arabia [6]. There is also a demand for standardization of ancient healing methods like cupping therapy to reduce its side effects and to help traditional medicine integration with modern medicine [7]. Therefore, it was mandatory for the Saudi National Center for Complementary and Alternative Medicine (NCCAM) in the Ministry of Health (MoH) to take the initiative to regulate cupping practice in Saudi Arabia. Cupping therapy training programs were developed in many countries as an isolated course or as a part of traditional medicine training or higher education [8]. In Saudi Arabia, the cupping training course accredited by the Saudi NCCAM in the MoH is a mandatory requirement for practicing cupping therapy in Saudi Arabia [8]. A review of the first few courses showed that the vast majority of cupping practitioners were taught cupping skills on patients. Also, trainees had a mixture of experience. A substantial proportion of trainees were novices, lacking prior cupping experience.

Cupping is done by producing negative pressure inside cups either by fire or mechanical suction and applying them on the

skin surface [9]. The literature describes dry cupping, wet cupping, flash cupping, massage cupping, herbal cupping, water cupping, and magnetic cupping [10]. Dry and wet cupping will be further described.

Dry cupping is done by applying cups on the skin surface without scarification [11]. Various negative pressures can be produced inside cups. Light pressure is when the pressure inside the cup is less than 200millibar, moderate pressure is when it is less than 300millibar and strong pressure is 500millibar and more [12]. Controlling negative pressure inside cups can prevent adverse events such as dermatitis bullae related to high pressure or prolonged cupping [13]. Hence, producing and comparing various cupping negative pressure is an important requirement in cupping training because trainees need to be familiar with various cupping pressures, acquiring the skills for performing light, medium and strong cupping, and developing the clinical skills to control the pressure inside the cup.

Wet cupping could be a two or three stages procedure. Two-stage wet cupping is done by making superficial incisions with a surgical blade, and then applying cups [14]. Three-stage wet cupping is called Hijama in Arabic. It is done by applying the cups first, then making incisions and scarifications and finally reapplying the cups again [15]. Therefore, handling surgical blades and creating superficial incisions are essential skills of future cupping therapist.

Prior to dry and wet cupping training courses conducted in the NCCAM, a workshop was conducted to evaluate the training methods and to examine available simulation techniques to be used in the training course. We searched Google Scholar and Pub Med electronic websites for finding out a novel method in cupping training

field. This was meant to develop trainees' clinical skills, and to provide prolonged clinical training hours in cupping therapy without stress, or any harm that can happen to the volunteers. We found a retailer source for artificial skin in China (skin model surgical sutured skills training module, and Model Number: 45345). The artificial skin was 180 * 100 * 25 mm in size, and made from non-toxic silicon materials showing the layers of the skin and subcutaneous fat and muscles. This artificial skin is used for simulation training in cupping therapy (see Fig. 1) The artificial skin has been used for acquiring the basic skills of clinical cup application, suction, power of suction, cup handling, skin manipulation and scarification.

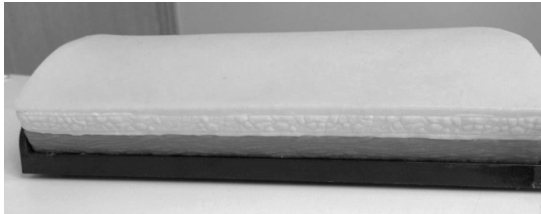


Fig. 1. Shows the artificial skin

Safety and ethical concerns were raised about the training on humans because trainees may make clinical errors and even harm patients. An important ethical question was raised about the appropriateness of using real patients as training resources [16]. Conversely, the use of simulators circumvents several ethical obstacles. The trainees are liable to make mistakes, learn to recognize, and correct them in the forgiving environment of the simulation, with no fear of harm to real patients. At the same time, the educational experience tends to be truly learner-centered instead of focusing on the patient as is appropriate in actual clinical settings. Trainees may not treat the part task-trainer as a real patient and may experience difficulty making the transition from the part task-trainer the real patient setting [16]. Therefore, the use of skin-based training could help the trainer first and then trainees to effectively apply the cups and use surgical blades in a real clinical scenario, and non-stressed environment. Like any training program in simulation labs, simulations are highly effective in promoting acquisition of skills among medical learners and applying simulation-based learning into patient care setting. Gaining proficiency in clinical skills also gives rise to a sense of self-efficacy [17]. The artificial skin used in surgical suturing training could be used in cupping therapy training as a part task trainer to

give a near real feeling of the skin together with the differences between various inside cup pressures by showing different skin elevations inside the cup., Furthermore, a semi-realistic cupping marks are also produced on artificial skin which are temporary, and these marks look like as if produced on living human skin (See Figs. 2 and 3).

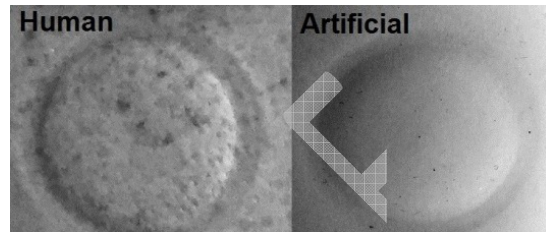


Fig. 2. Shows cupping pressure marks on human and manikin skin

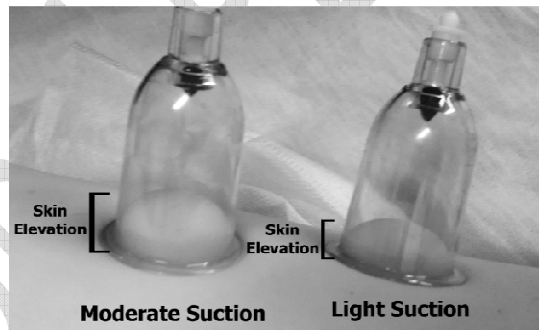


Fig. 3. Various pressure effects on manikin skin

2. CONCLUSION

Simulation has become an important component of under- and post-graduate education and continuing medical training. The current model of a simulation-based curriculum used in the Saudi NCCAM, represents a shift from traditional training mode to a skin-based simulation model. Using a skin-based task part trainer in complementary medicine training will help professional trainers in improving and standardizing the training programs, and allow for transition to safe and better quality integrative healthcare. Studies using pre-and post-training design are needed to evaluate trainees' knowledge, attitude, practice, satisfaction, and improved skills. Also, different skin simulators should be reviewed to select the best model for cupping training.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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