ORIGINAL RESEARCH

Cultural Appropriation for Improved Knowledge Acquisition in Medical Education

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Background: Culture is an essential component that governs all aspects of human behavior. Superstition is an irrational belief observed in almost all cultures. It is linked to one or more factors like supernatural powers, good luck, bad omen, fiction, illegitimate activity, absurd narration, folk tales, or practice without any rational basis.

Methods: A cross-sectional social experiment was conducted to evaluate the effect of cultural appropriation as a tool to enhance medical knowledge acquisition and attitudinal development in medical education. The experiment was designed to target a non-medical population. Four superstition-oriented videos were developed with 20 scientific pieces of information related to forensic medicine. A data collection sheet was developed on Microsoft form with 16 questions was distributed on the participants.

Results: Out of the 986 participants, 763 (77.5%) watched the whole set of videos. About 55–95% of responders demonstrated knowledge acquisition of all the questions. There was a statistically significant difference between those who watched the videos and those who did not. When participants were asked about the most important information they remember from the videos, their answers fell into two main categories; information related to core scientific knowledge (80% of participants) and information not related to the core knowledge (16% of respondents). The top three areas for the reasons why people wanted to watch the videos were curiosity, knowledge, and career. A change in attitudes was reported among the participants where 80% of responders demonstrated curiosity to know more about this world, 46% responders reported developing more respect for the forensic physician and 43% revealed their ignorance about this great hidden world.

Conclusion: Cultural appropriation could be a needed strategy to accommodate for upscale in education. Learners might validate that learning happens through a door that adopts not only honours their culture and adapts to it.

Keywords: contextualization, knowledge acquisition, medical education

Introduction

Culture is considered as an essential component that governs all aspects of human behavior including thinking, perceiving, and reacting which may either be acquired or transferred across generations.[1,2]

Kroeber defined culture as

> … consists of the patterns, explicit or implicit, of and for behaviour acquired and conveyed by symbols, shaping the achievements of human groups, including their embodiment in artifacts.[3]

It is established based on several factors such as language of communication, regional economy, governmental policies, social status, individual attitudes, codes of manners, religious customs, and accessibility to education.[4–9]

Numerous scientific studies have concluded that culture modulates critical thinking thereby impacting all aspects of cognition ranging from education to superstition.[9–18]

Superstition is defined as an irrational belief observed in almost all traditions and is linked to one or more factors like supernatural powers, good luck, bad omen, fiction, folk tales, or practice without any rational basis.[19] People tend to become more superstitious when they cannot control the course of events or outcomes.[20,21] It can be very destructive when it enters the domain of health-related beliefs and practices.[22,23]

Patients with superstitious beliefs often fail to adhere to their treatment protocols leading to high health care costs.[24,25] In the recent past, there has been growing evidence to demonstrate the strong impact of culture, and superstition on health care in terms of health equality, health literacy, and effectiveness of public health interventions.[22,26–30]

Airhihenbuwa (1989) developed "PEN-3 cultural model" to understand the effect of culture on health behavior (acceptance towards cervical cancer screening, mammography, AIDS prevention etc) and health outcomes.[31,32] There are three domains in PEN-3 cultural model, namely Cultural Identity (Person, Extended Family, Neighbourhood), Relationships and Expectations (Perceptions, Enablers, and Nurturers), and Cultural Empowerment (Positive, Existential, and Negative).[31–33]

This model explores the health behaviour of a population through a collective approach. This can be used as a qualitative or quantitative tool, to actively connect with the community, and assess their beliefs and practices. In this study, we focus on the construct "Relationships and Expectations", that primarily targets the perceptions/attitudes towards the health issues. This is particularly essential for addressing societal attitudes towards healthcare since it acknowledges the importance of interpersonal dynamics and cultural expectations. This domain also emphasizes the links among individuals, communities, and healthcare providers. Comprehending cultural norms surrounding health practices facilitates the creation of feasible and successful health interventions. Along with improving healthcare acceptability, this model also encourages positive attitudes, guaranteeing culturally competent healthcare delivery and enhancing general health outcomes.[31–33]

Cultural appropriation (CA) is a term used to describe the practice of utilizing narratives, practices, styles, motifs, dance, dress, music, language, culinary, remedies, religious symbols etc. of a certain cultural clan by outsiders who do not belong to that clan.[34,35] The issue of whether this form of "copying" is an honour or an insult depends on the context in which it is used.[36] When used improperly, the term CA can be directly linked to condescendence among targeted people.[37,38]

CA can be a useful strategy, if it is employed carefully taking into consideration local/regional practices and incorporating them into healthcare activities. This kind of intervention maintains cultural authenticity when addressing challenging attitudes towards healthcare, while respecting their beliefs at the same time.[37–39]

This study aims to test the applicability and impact of use of culture appropriating to enhance medical knowledge acquisition and attitudinal development towards forensic medicine through the use of culturally appropriated customized videos.

Methodology

This work was based on a social experiment to evaluate the effect of cultural appropriation as a tool to enhance medical knowledge acquisition. The experiment was designed to target a non-medical population with a specific interest in supernatural forces and with an above average level of superstition. The targeted population were identified as the followers of a specific Facebook page accustomed to publishing videos with the above-mentioned nature: https://www.facebook.com/POVsamehsanad/. The page had around 500,000 followers at the time of the study and the experiment was designed to reach them specifically.

Sociodemographic analysis of the page followers was extracted from the page analysis details which showed a 59% female to 41% male ratio. Participants are all Arabic speakers who have a considerably above normal level of superstition as the page content spoke to people with this superstitious inclination and received a high level of interaction for content that was related to superstition. Participants were from the Middle East 92% and 8% constituted Expatriates who lived in Europe (4%) and the US (5%).

Four videos (Supplementary Video 1; Supplementary Video 2; Supplementary Video 3 and Supplementary Video 4) were developed with 20 scientific pieces of information related to forensic medicine. A script was devised for each video that included a drama line with a relevant degree of superstition and a forensic information package for each (Appendix 1). The video lengths were ranging from 5 minutes to 22 minutes long. The amount of information embedded in each video was relative to the drama line descriptions of the videos and the script design are mentioned in Appendix 1.

A data collection tool was developed on Microsoft form with 16 questions distributed as 11 closed ended questions testing the knowledge acquisition, one question testing the change in attitudes towards forensic medicine and forensic practitioners, 2 questions pursuing descriptive information and 2 open ended questions about the motive behind watching the video and the most important piece of information viewers retained. The questionnaire was designed specifically for the purpose of the study. It was piloted on 5 test subjects outside the authors and refined.

The form was shared with the general population for two months duration via social medical channels.

Data Analysis

The form data were extracted, tabulated, and presented. The analysis was performed using Microsoft Excel Windows, version 17. Quantitative data were tabulated and summarized in proportions and percentage, using chi-square test for comparison of percentage of knowledge acquisition between participants who watched the videos and those who did not. The significance level was considered if P ≤0. 05.

A qualitative analysis was performed for the open-ended questions. Inductive thematic coding was based on the results of the open-ended question. This was followed by flat framing.

Results

Effect on Knowledge Acquisition

Out of 986 people who responded to the survey 763 (77.5%) watched the whole set of videos. Responders were categorised based on whether they watched the videos till the end. Percentage of responders who demonstrated knowledge acquisition for each of the questions are demonstrated in Table 1 where 55–95% of the responders demonstrated knowledge acquisition of all the questions.

When respondents were asked about the most important information, they remember from the videos their answers were analysed into two separate types of inputs (correct and false answers). Responders were categorized based on watching the videos into two groups Group A: Participants who watched the videos and Group B: Participants who did not watch the video. It shows a statistically significant difference between group A and group B as regard questions number 1 and 4 (p-value <0.05) and questions number 3, 5, 6, 7, and 8 (p-value <0.0001). Table 2

Group A: Participants who watched all the videos completely.

Group B: Participants who did not watch the videos or watched the videos incompletely.

When participants were asked about the most important information they remember from the videos, their answers fell into two main categories; information related to core scientific knowledge (80% of participants) and information not related to the core knowledge (16% of respondents) (Table 3)

Table 1 Percentage of Responders Who Demonstrated Knowledge Acquisition for Each of the Questions

Correct Information	No (986)	Percentage
1. The forensic doctor can determine the time of death with an accuracy of up to duration	608	62%
2. Two people can match the same fingerprint	949	96%
3. Of the types of fingerprints in humans are all of the following except head	799	81%
4. Corpses swell after death from impact Rot gases	952	97%
5. The gunshot hole increases in size as it increases the distance is near.	795	80%
6. If the opening for the gunshot entry is large, then this is done by gases	533	55%
7. If the bullet entry hole is small, that is done by skin elasticity	551	56%
8. A study of the nails of the deceased can diagnose suicide or not	937	95%
9. Not all corpses go through rotting	803	81%
10. In cases of complete hanging, the face of the deceased is painted blue	873	98%
11. The dimensions of the human face may be determining his/her identity	541	55%

Table 2 Chi-Square Analysis of Knowledge Acquisition Between Video-Watching and Non-Video-Watching Participants

Question	Answer	Group A	Group B	X^2	P value
1	Correct	487	121	6.681	0.009
	Incorrect	276	102		
2	Correct	737	212	1.111	0.29
	Incorrect	26	11		
3	Correct	637	162	13.195	<0.001
	Incorrect	126	61		
4	Correct	743	209	6.931	0.009
	Incorrect	20	14		
5	Correct	639	156	21.02	<0.001
	Incorrect	124	67		
6	Correct	448	89	24.606	<0.001
	Incorrect	315	134		
7	Correct	453	98	16.653	<0.001
	Incorrect	310	125		
8	Correct	737	200	17.429	<0.001
	Incorrect	26	23		
9	Correct	657	146	0.37	0.54
	Incorrect	106	77		
10	Correct	673	200	0.373	0.54
	Incorrect	90	23		
11	Correct	426	115	1.266	0.26
	Incorrect	337	108		

Notes: Group A = participants who watched the videos; Group B = participants who did not watch the videos; n = number of participants; χ^2 = Chi-Square; p = p-value.

Drivers for Learning

When candidates were asked to highlight the reason that attracted them to watch the videos, they answered the open-ended question and upon analysis themes emerged. They are mapped in Table 4. The top three areas for the reasons why people wanted to watch the videos were curiosity, knowledge, and career. About 37% of the coded responses were about curiosity, requesting a simple storytelling method. They had expressed their enthusiasm to discover the secrets of forensic medicine. The next popular desire was about knowledge, recognizing the cause of death and how to scientifically investigate it. A noticeable percentage of answers are seeking information that would be helpful with their careers (members of the legal profession and the medico-legal specialty). About 19 of the contributors declared that they did not watch the videos. Seemingly, they were enthusiastic about the topic of the study more than the content. They were interested in answering the questionnaire despite not watching the videos. Only four out of the 963 contributors had accidentally watched the videos on Facebook, but they were interested to complete the experience by responding to the questionnaire. Over 80% (80.3%) of the contributors declared that they have gained core knowledge. They were able to define suicidal, homicidal, and body print

Table 3 Open-Ended Question 2: "What Do You Remember the Most from Watching the Videos?"

Type of Information acquired	Count	Percentages	Respondents' Quotes
Theme 1 (Core scientific information)	792	80%	"Fake suicide" "Nails and suicide" Types of fingerprints, especially footprints. "The difference and multiplicity of fingerprints" "There are other fingerprints in the human body, not just fingerprints" "The effect of the gunshot and the difference between the proximity and distance of the crime scene" "The importance of the crime scene in preparing a scenario for the incident and determining its features to show the truth" "Some corpses do not decompose completely" "The closer the distance of the gunshot, the greater the opening to enter it" "Death due to electricity" "The corpse is moving by the action of the gases"
Theme 2 (Knowledge not related to core information)	158	16%	"The medical examiner feels that the deceased is talking to him" "Every corpse has a language" "In the long run, people's minds are drifting in malicious ways"
Theme 3 (no response)	36	4%	"Don't remember"
Total	986	100%	

Table 4 Drivers for Learning

Themes	Sum of Counts	Percentage	Respondents' Quotes
Theme 1 (curiosity and excitement)	499	37%	Many respondents expressed feeling intrigued by the title and the theme of the video. "The title of the video attracted me" "It is a new world of mystery" "The world of the dead is an interesting topic for me" "I have just lost a loved one" "Curiosity, and since I am from the same Arab countries, we have the same tools, traditions, and beliefs"
Theme 2 (knowledge)	478	35%	"To learn and explore" "Increase my knowledge of one of the most important medical sciences" "Learn about forensics, autopsy, crime and mystery" "I would like to know information about forensic medicine"
Theme 3 (Career / Personal interest)	251	18%	"I have always been interested in learning forensics" "I dreamed of being a forensic practitioner" "Because I want to be an autopsy doctor"
Theme 4 (Presenter/ content creator)	138	10%	"I like the presenter's storytelling technique" "The presenter is very knowledgeable" "You present the content elegantly"
Grand Total	**1366**	**100%**	

information on a scientific basis. A very few had an erroneous understanding of core information: "The closer the distance, the more bullets fired, the smaller the entry hole"; where some data got mixed up with the contributor. It is recommended that there could be open discussions or seminars to clarify some of this confusing data for the professionals and community.

Table 5 Change in the Attitude of the Responders After Watching the Video

Perception	No.	%
• Respect the forensic physician	452	46%
• There is a great hidden world that I know nothing about	425	43%
• I am scared	35	4%
• I want to know more about this world	793	80%
• None of the above	14	1%

Change in Attitudes

When participants were asked about their change in perception regarding forensic medicine and forensic practitioners after watching the videos, they reported a change in perception that was tabulated in Table 5, where 80% of responders demonstrated curiosity to know more about this world, 46% responders reported developing more respect for the forensic physician and 43% revealed their ignorance about this great hidden world.

Discussion

Cultural Contextualization as a Vessel for Learning

In this study, 55–95% of responders demonstrated knowledge acquisition of all the questions. This was an important aspect that demonstrated that when placed in a proper social/cultural context, academic achievement is nurtured.

Social adaptation is a natural human behaviour, aimed at creating harmonization between the needs of an individual and demands of the external situations. One of the main goals of human survival is to adapt with social circumstances, cultural differences, and outlooks so as to achieve homeostasis with the social milieu (AlZboon, S. O., 2013).[40] Studies show that a person's social adaptation favours a positive balance in the school environment, thereby enhancing his / her academic motivation, and utilization of talents and skills to the maximum possible level.[41,42] There is a direct positive correlation between academic achievement and social adaptation.[43] Academic success in higher education, is determined by successful adaptation to numerous transitions and exposure to a wide range of factors including diverse social backgrounds, cultural values, educational experiences, skill requirements, personal beliefs, varying affinity towards education and so on.[44,45] According to experts, the social adaptation is very crucial for effective learning, and it depends on personal, physical, and social traits, linked to formal and informal learning environments.[46]

One of the most desirable abilities of the twenty first century, is the capacity to respond to uncertainties and ambiguities, in a complex socio-cultural environment.[47] In addition, the current pandemic has empowered people to adapt themselves positively to a rapidly changing social, political, and technical landscape.[48] Hence, social adaptation can be viewed as a tool to create a nurturing educational environment that is conducive for developing personal capabilities, innovative capacities, professional skills, and cooperative culture among students.[49]

Since social adaptation is shown as one of the significant determinants of academic achievement educational institutions should thrive to use this as a powerful tool to help students reach their goals.[42] Educational institutions should transform themselves in order to cultivate a harmonious environment that is appropriate for social adaptation and multiculturalism.[46,50]

Social/ Cultural Contextualization and Raising Curiosity for Education

Social and cultural contextualization was shown in this work to be able to raise curiosity in the content delivered. When testing the drivers for learning among the subjects, curiosity was among them in 37% of subjects.

Social contextualization fosters curiosity among learners for achieving desired educational outcomes.[51] It also inculcates academic resilience of students through adaptive learning processes.

Modern education should succeed in creating awareness about multiculturalism and insist on "unity in diversity" through dialogues and group interaction. In this manner, all cultures can be preserved and there is scope for realization of new cultural tenets.[52,53] (Mirzaei & Kadivarzare, 2014, Toprak & Kumtepe, 2017). The active introduction of the

concepts of multiculturalism early in the educational processes, augments the readiness of the students towards social adaptation and ease their navigation through complex educational settings, eventually leading to academic success.[54]

Students with social competency find an ideal balance between the desire to be independent, and the necessity to follow cultural values. This enables the students to evaluate problematic situations; to explore different alternatives; to select the ideal approach of behaviour, and anticipate expected results, all of which are mandatory for academic achievement.[54]

Change in Learner Perception by Using Cultural Appropriation

In this study, there was a change in learner perspective where 80% of responders demonstrated curiosity to know more about this world, 46% responders reported developing more respect for the forensic physician and 43% revealed their ignorance about this great hidden world.

Learners in this study developed a cultural shift after having watched the videos. This finding is in accordance with other studies in the field that highlighted the effect of visual inputs on shifting culture of perceivers.[55] There was a change in perception of learners as regards the value of forensic medicine. This was also in accordance with other studies that highlighted the importance of education in increasing the valuation of students.[56]

In this study learners were subjected to the videos for a total of less than one hour exposure, yet there was a reported shift in attitude and perception. This is in agreement with the study performed by Lamb et al in 2020 who concluded that there was a need for prolonged exposure in order to affect change in perception and/or attitudes.[57] In the current study, the shift in attitudes and perception was examined through a self-report of participants which could affect the validity of the information, and this could be the reason behind this fact. This does not negate the fact that using cultural appropriation in delivering the educational message had an impact on the deep learning of educational facts.[58]

Conclusion

Cultural appropriation could be a needed strategy to accommodate upscale in education. Learners might validate that learning happens through a door that adopts not only honours their culture but adapts to it. Educational institutions should transform themselves in order to cultivate a harmonious environment that is appropriate for social adaptation and multiculturalism. Appropriating culture can significantly transform the attitudes of learners in addition to creating shifts in knowledge acquisition in many instances through cultivating interest.

Recommendations

- Education is a social science that needs to be integrated into the social culture and affected by it.
- Curricula need to be revisited and aligned with the social culture.
- Teaching methods have to be readdressed to suit the general temperament of students and their preferred methods of knowledge uptake.
- Many of the established methods of education need to be restudied in light of the current trends and needs.

Limitations of the Study

Prior knowledge of the participants was not tested in this study. This is the case with most social experiments. The idea was to be able to establish a ground for the study of applicability of the approach and maybe further focus on evaluation results that need to be conducted. The study of sociodemographic construct of the respondents and the implications of that on the results of knowledge attainment were also not feasible in this study but pose a limitation of the results.

Data Sharing Statement

The materials are video recordings and surveys. Data sets are available at Harvard Dataverse. The data and materials can be accessed at https://doi.org/10.7910/DVN/MDOELN, Harvard Dataverse, V1.

Ethics Approval and Consent to Participate

All methods were performed in accordance with the relevant guidelines and regulations. The work was approved by the Research and Ethics Committee (REC) of Ain Shams University under number FX2002-8/20. Participants provided

informed consent through the form distributed, which included permission for the publication of their responses in an anonymized format.

Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

Disclosure

The authors declare that they have no competing interests in this work.

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