



Medical Students' Attitudes and Beliefs toward Chronic Low Back Pain (CLBP) at King Abdulaziz University, Jeddah, Saudi Arabia

**Reem Alyoubi¹, Afnan Alotaibi^{2*}, Haifa Mohamed², Lama Alghamdi²,
Nouran Alhumaidi², Roaya Alsulami² and Shehana Tayyeb²**

¹Department of Pediatric Neurology, King Abdul-Aziz University Hospital, Jeddah City, KSA.

²Faculty of Medicine, King Abdul-Aziz University, Jeddah City, KSA.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i31B31695

Editor(s):

(1) Dr. Dharmesh Chandra Sharma, G. R. Medical College and J. A. Hospital, India.

Reviewers:

(1) José Jesús Jiménez Rejano, University of Seville, Spain.

(2) D.Anandhi, SRM Institute of Science and Technology, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/69733>

Received 02 April 2021

Accepted 08 June 2021

Published 14 June 2021

Original Research Article

ABSTRACT

Background: Low back pain (LBP) is one of the most common reasons for long-term disability among the world. Up to 70–85% of people develop a back pain during the course of their lives. It affects people of all ages and is generally caused by sedentary jobs, obesity, smoking and low socioeconomic status. Chronic low back pain (CLBP) harms one's work effectiveness, psychological condition and social responsibilities, such as family life. LBP is considered an indication for medical rehabilitation and is increasingly becoming a significant factor in rising healthcare costs. The current LBP guidelines recommend health care professionals to encourage patients to conduct daily physical activity, which includes remaining in purposeful work and staying active daily. Health care practitioners (HCPs) who hold negative beliefs toward CLBP are likely to suggest advice against the present guidelines, including long days absence from their jobs. On the other hand, HCPs holding positive beliefs are more likely to appreciate the guidelines.

Objective: We aimed to evaluate the beliefs and attitudes toward CLBP among medical students in Jeddah, Saudi Arabia at the King Abdulaziz University (KAU), between June–July 2018.

Methods: We conducted a qualitative cross-sectional study among 370 medical students at the KAU using an online HC-PAIRS questionnaire. We entered the data using an Excel sheet (2013) and then analyzed it using SPSS (version 23). We used chi-square, one-way ANOVA and summary and independent t-tests.

*Corresponding author: E-mail: Afnaan1almnsor@gmail.com;

Results: In this study, we used the mean and standard deviation of the total score to compare our study ($\mu = 64.43 \pm 11.34$) with a previous study that focused on functional restoration HCPs at the Tufts University, USA ($\mu = 38 \pm 7$) using summary t-test ($t = -25.316$). The p-value was significant (<0.001).

Conclusion: We demonstrated the differences between KAU students and HCPs at Tufts University regarding the HC-PAIRS questionnaire score, which revealed a higher mean score among our participants. This led us to conclude that KAU medical students hold negative attitudes and beliefs concerning the application of CLBP guidelines. In light of this, we recommend raising awareness about CLBP guidelines among the medical students and the society at large.

Keywords: CLBP; LBP; guidelines; medical students.

1. INTRODUCTION

Worldwide, one of the common causes of long-term disability is Low back pain (LBP) [1,2]. Around 70–85% of all people will get back pain at some point in their lives [3]. The duration may classify LBP into acute (pain lasting less than six weeks), sub-chronic (6–12 weeks), or chronic (more than 12 weeks) [4]. It was reported that 5% to 10% of cases would develop chronic low back pain (CLBP) [5]. Also, it affects all ages and is generally related to sedentary jobs, obesity, smoking and low socioeconomic status [6]. Besides, CLBP affects work effectiveness, psychological status and social responsibilities, such as family life, and is a common cause for lost workdays and confined activity [7–10]. For many years, LBP has been considered an indication for medical rehabilitation and is increasingly becoming a significant factor in rising healthcare costs [7,11]. The economic load of LBP in the USA, including both indirect and direct costs, ranges from \$84.1 billion to \$624.8 billion [12].

Pharmacological and non-pharmacological treatment options are used in the management of CLBP, with or without consulting a physician. Acetaminophen and nonsteroidal anti-inflammatory drugs are the first-line pharmacological treatment for CLBP. In the literature, the pharmacological treatments varied included opioids, analgesics, antidepressants, muscle relaxants and injections [13,14,15].

The current LBP guidelines advise health care professionals to encourage patients to engage in daily physical activity which includes remaining in purposeful work, being active daily, doing exercise and evading bed rest [10,16]. Health care practitioners (HCPs) who hold negative beliefs concerning CLBP are likely to offer advice contrary to the LBP guidelines, and the most

cumbersome of which, both on individual and societal levels, is a prolonged absence from their jobs. Conversely, those who hold positive beliefs are more likely to follow the guidelines [16].

Despite the presence of extensive pointers for managing LBP in the guidelines, as previous studies have shown, HCPs do not always adhere to them. A range of attitudes and beliefs that HCPs have about back pain show influence on the recommendations regarding work and other activities that HCPs offer patients [17].

While most people with CLBP can perform their professional and daily life activities normally, some might have significant levels of disability [18]. Numerous elements, unlinked to pain, contribute to back disability; a significant component is the patient's attitudes and beliefs concerning their pain [19]. For example, if a patient certifies that physical activity evokes pain and aggravates their condition, then they may avoid engaging in that activity [19]. A study showed that the patients who were treated with a multidisciplinary pain program had improved physical and psychological functioning, and this was associated with changes in beliefs about pain and cognitive coping strategies [19]. Additionally, healthcare workers' beliefs and attitudes can have a potent effect on CLBP patients' beliefs and attitudes [19]. The treatment outcome is influenced by the attitudes and beliefs held by HCPs and it is a significant part of the healthcare process [17]. Educational strategies planned towards altering patients' and HCPs' beliefs concerning LBP, it has been found, can decrease disability and pain [18]. However, the limited knowledge of medical students and their attitudinal barriers regarding LBP management have resulted in a greater number of pain issues [20,21]. Therefore, the current medical graduates must gain the right attitudes toward CLBP during their training [16].

The annual prevalence of CLBP around the world was found to range from 15% to 45%, with a point prevalence of 30% [7]. As evaluated by several studies, the estimated average age-related incidence of constituent LBP is approximately 15% in adults and 27% in elders [7]. In the coming years, the frequency of severe back pain will increase sharply, which poses, in many countries, a significant public health outcome for the aging population [7]. Females and those aged between 40 and 80 showed the highest prevalence in the same study, and it revealed that LBP is a big problem among the world [7]. According to a study conducted in Saudi Arabia, LBP prevalence is 53.2% to 79.17%. Another one, conducted in Al-Qaseem province of Saudi Arabia, revealed the number of LBP cases to be 1081 (18.8%) out of 5743 responders, of whom 574 (10%) were female and 499 (8.8%) were male [4].

There is no information available about the attitudes and beliefs regarding CLBP among the medical students in Jeddah, KSA, based on our literature review. If students' recommendations were found to be negatively influenced by patients' age for LBP treatment (e.g., activity-evading recommendations for elders), then this would distinguish the fundamental training defects that must be addressed [10]. Since LBP prevalence in our population ranges from 53.2% to 79.17%, medical students must follow the guidelines and develop proper attitudes toward CLBP patients during their training. Thus, we aim to evaluate the attitudes and beliefs toward CLBP among medical students in Jeddah, Saudi Arabia.

2. METHODOLOGY

A qualitative cross-sectional study was approved by the Institution Review Board (IRB) of Biomedical Ethics at King Abdulaziz University (KAU). The study was conducted on first to fifth year medical students, and it was done at KAU, Jeddah, Saudi Arabia during June and July 2018. The calculated sample size was 370.

We measure medical students' attitudes and beliefs toward patients suffering from CLBP using an online survey. The completion of the online survey was deemed as the providing of informed consent. A questionnaire developed by Rainville et al called the Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS) was used in the survey (4). The scale has high internal and reliability consistency when

used to measure the beliefs and attitudes of HCPs to CLBP [4]. HC-PAIRS contains 15 statements suggesting that the impairments and disability found in LBP patients are directly attributable to pain [19]. The respondents gave their consent with each statement using the Likert scale, with 1 indicating completely disagree and 7 completely agree [4]. 15 to 105 is the scores range, with a higher score implicating a stronger attitude and belief that CLBP justifies the limiting of activities and disability [4]. Four dimensions of attitudes and beliefs was measured using the items from the (HC-PAIRS) questionnaire: functional expectations (items 1, 2, 3, 6, 7, 8, 9, 11, and 12); social expectations (5, 7, 11, and 14); need for cure (4, 9, and 15); projected cognition (10 and 13) [4].

*In addition to the previous questions, demographic data: gender, age, height, weight, past or current history of LBP, academic year and GPA were collected from the participants. Filter questions were used to identify those medical students who had experience in managing CLBP. Those who refused to fill out the questionnaire were excluded.

*The data were entered using Excel 2013, and all the analyses were performed using the SPSS version 23. The numerical data were calculated by measures of central tendency, and the categorical data were analyzed with frequency tests. The academic year was compared with the presence of CLBP among medical students using the chi-square test. The "one-way ANOVA" was used to compare the GPA and the total score. In addition, the "summary t-test" was used to compare the overall mean score of our students with the mean score of the students from Tufts and Al-Dammam universities. Finally, an independent t-test was used to compare the total score with gender as well as the academic year.

3. RESULTS

In our sample size of 370 medical students, the number of students belonging to each gender and academic year was equal. No significant association was detected between the HC-PAIRS score and the gender ($p=0.264$). Moreover, there was no relation between the academic year and the total score ($p = 0.177$). Table 1 shows the number of students with and without CLBP according to their academic year.

Table 1. Distribution of CLBP among medical students

Academic year	Students with CLbp	Students without clbp
First year	5	69
Second year	12	62
Third year	9	65
Fourth year	15	59
Fifth year	15	59
Total	56	314

A chi-square test was used to compare the academic year with the presence of CLBP among medical students. The first year had the lowest number of students with CLBP: only 5 (8.93%) students out of the total students with CLBP. There was no significant difference based on the test, which shows a p-value of 0.105.

We compared the mean and standard deviation of the total score of our study with that of previous research, which focused on the functional restoration HCPs at Tufts University, USA (1). Our mean score was 64.43 ± 11.34 , and a score ranged from 21 to 101, while their mean score was 38 ± 7 , and a score ranged from 26 to 52, which is narrower than ours. According to the summary t-test ($t = -25.316$), the p-value was <0.001 , indicating a significant difference between our study participants and the functional restoration HCPs.

Fig 1 demonstrates the different sources from which the students learned about CLBP management and also those who did not know about the management.

An independent t-test comparing the total scores of students with CLBP ($\mu = 63.66 \pm 11.019$) with the total scores of students without CLBP ($\mu = 64.57 \pm 11.418$) revealed no association between CLBP and the HC-PAIRS questionnaire score ($t = -0.552, p=0.581$), indicating that students with CLBP did not follow the guidelines any better than the ones without CLBP.

We studied the relationship between the total score of students who had previous CLBP-related workshops and those who had not. There was no statistically significant correlation between the total score and attending previous workshops as approved by the t-test result which shows 1.155, with a significance level of ($p = 0.249$). More details have been shown in Table 2.

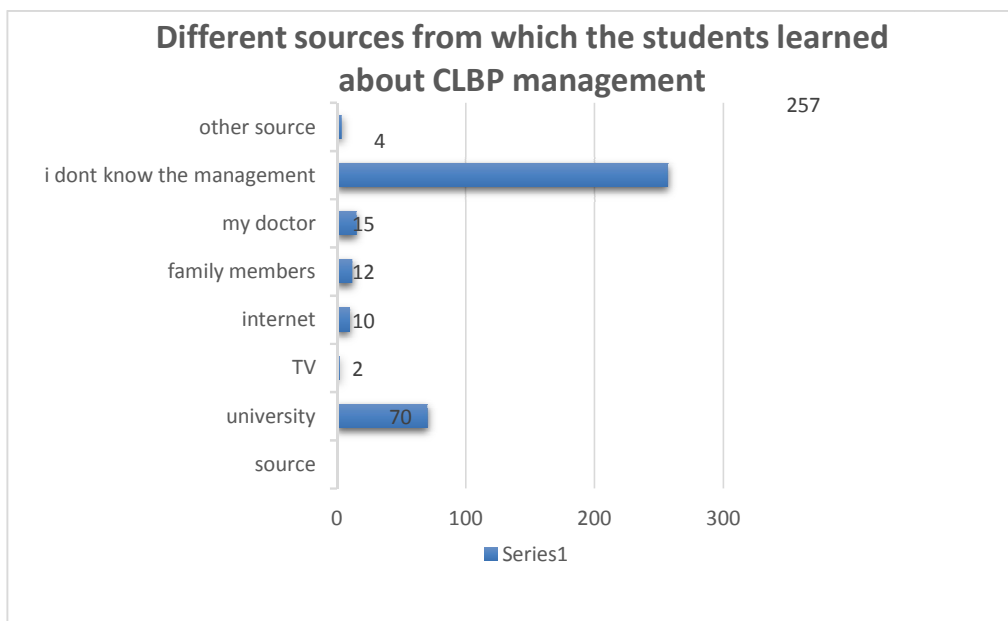


Fig. 1. Different sources from which the students learned about CLBP management

Table 2. Number, percentage, and the mean and standard deviation of students who attended previous workshops and those who did not

Previous workshops	Number / pERcentage of students	Mean	Standard deviation
Yes	18(15.14%)	67.44	13.338
No	352(84.86%)	64.28	11.238

Table 3. Comparison of the HC-PARIS dimensions scores (mean/ S.D) between KAU medical students and Tufts University functional restoration providers

	Medical Students at KAU (Mean / S.D.)	Functional Restoration Providers (Mean / S.D.)	t	p-value
Functional Expectations	37.89 / 7.284	17 / 5	-28.909	0.000
Social Expectations	14.44 / 3.774	8 / 2	-20.457	0.000
Need for Cure	13.82 / 3.269	7 / 3	-15.801	0.000
Projected Cognition	9.75 / 3.386	12 / 2	7.435	0.000

Table 4. Comparison of HC-PARIS dimensions scores (mean/ S.D) between KAU medical students and Al-Dammam University physiotherapists

	Medical Students at KAU (Mean / S.D.)	Physiotherapy Students at Al-Dammam University (Mean / S.D.)	t	p-value
Functional Expectations	37.89 / 7.284	40.84 / 6.04	3.237	0.001
Social Expectations	14.44 / 3.774	14.85 / 4.17	1.050	0.294
Need for Cure	13.82 / 3.269	15.82 / 3.05	6.192	0.000
Projected Cognition	9.75 / 2.386	9.86 / 2.30	-1.641	0.101

As determined by one-way ANOVA, there was a statistically significant difference between students' GPA and their total score [$F(4, 365) = 2.724, p = 0.029$]. A Tukey post hoc test revealed that the students who had a GPA below three were statistically and significantly different from those who had a GPA of (3.5–3.99) and (4–4.49) with a significant p-value of 0.046 and 0.035 respectively.

Tables 3 and 4 outline our scores in the four dimensions of the HC-PAIRS questionnaire in comparison to the four dimensions of the function restoration providers in the previously mentioned Tufts University research and the recent research conducted in Al-Dammam University, Saudi Arabia, respectively.

4. DISCUSSION

In our study, we aimed to assess the medical students' attitudes and beliefs toward CLPB in KAU, Jeddah, Saudi Arabia.

To our knowledge, this study is the first of its kind to employ the HC-PAIRS questionnaire in King

Abdulaziz University which indicates its necessity.

We compared the mean and standard deviation of the total score of our participants with that of the original study that focused on the functional restoration HCPs at Tufts University, USA. The p-value was found to be <0.001 , indicating a significant difference between our participants and the functional restoration HCPs. Our research demonstrates a higher total score on the HC-PAIRS questionnaire compared to that of the Tufts University study, indicating stronger attitudes and beliefs, which state that CLBP justifies the limiting of activities and disability [4]. Thus, we believe that the level of education, cultural background, curriculum differences, professional experience, academic training type and economy may influence the beliefs and attitudes concerning CLBP.

As illustrated in Fig. 1, we asked the students about the different sources from which they learned about CLBP management. The majority of them (69.64%) lacked knowledge about CLBP management. Unfortunately, this state of affairs

may deteriorate the patients' status shortly, which, in turn, increases the financial burden on the health services.

Those who do know about CLBP management (30.36%) can be sub-classified by the source from which they learned CLBP management: the university and their doctor (18.92% and 4.05%), while a smaller number of medical students gained their knowledge from family members (3.24%).

Therefore, by changing the attitudes of the medical students, a positive impact on the community can be eventually achieved.

When it came to gender, there was no significant difference in the total score of the HC-PAIRS questionnaire ($p = 0.264$). Comparing this to the research conducted at Al-Dammam University, their results also showed that the gender-related total scores were statistically insignificant [4].

We also found no association between the academic year and the total score ($p = 0.177$). This was similar to that of the previously mentioned study conducted at Al-Dammam University, where no significant differences in the scores of HC-PAIRS were found among students in different academic years [4]. This may indicate the lack of all-inclusive study objectives in Saudi curriculums, which increases the need for Saudi universities to raise awareness regarding CLBP guidelines among medical students.

We compared the total scores of students with CLBP and the total scores of students without CLBP, and it revealed no association between the presence of CLBP and the HC-PAIRS score ($p = 0.581$). Another study reported that there was no difference in the HC-PAIRS scores between the students who did or did not have previous CLBP experience ($p = 0.363$) (15). It is logical to expect that students in our study with a history of CLBP may have gained a lower score than their colleagues with no history of CLBP. The reasoning behind the lack of difference found in our study can be due to the students' minimal disability by their pain or inappropriate management plans.

Moreover, there was no relationship between the students' total score of those who had previous CLBP-related workshop experience and those who did not, with a significance level of ($p = 0.249$). Physiotherapy students' attitudes toward and beliefs regarding CLBP, it was found,

changed following a 16-hour teaching module on CLBP [19]. These changes were observed immediately after teaching and also one year later. Following education, the students were less likely to agree with the view that CLBP justifies impairments and disability [19]. This suggests that undergraduate medical students in KAU need to gain the appropriate attitudes toward CLBP during their studies.

As shown in Table 3, we compared our students' results regarding the four dimensions of the HC-PAIRS questionnaire with the aforementioned study at Tufts University. Our results demonstrate a significant difference in all dimensions with a significant level of <0.001 . Moreover, all the dimensions in our study, except for the projected cognition dimension, show worse mean scores when compared to the Tufts University study.

Our results were also compared with that of the Al-Dammam research results as shown in Table 4 [4]. The KAU students' results indicate statistically significant differences among the "functional expectations" and "need for cure" dimensions, with a p-value of 0.001 and 0.000 respectively. Conversely, there are no significant differences within the social expectations ($p = 0.294$) and projected cognition ($p = 0.101$) dimensions. The dimensions one and three in our study show better mean scores, indicating that Al-Dammam University students have poorer attitudes regarding patients' ability to resume normal activities. In contrast, the other two dimensions, two and four, show similar attitudes, which can be attributed to the similarities in the cultural and educational backgrounds of both parties, both of which may affect students' perception of CLBP.

5. CONCLUSION

Our study aimed to evaluate the beliefs and attitudes toward CLBP of medical students in KAU, Jeddah, Saudi Arabia. Our study demonstrated the differences between KAU students and HCPs at Tufts University regarding the HC-PAIRS questionnaire score, which revealed a higher mean score among our participants. This led us to conclude that there are negative attitudes and beliefs toward the application of CLBP guidelines among KAU medical students. In comparison with Al-Dammam University physiotherapists' HC-PAIRS dimensional scores, their scores were higher in dimensions one and three than that of the medical students, while dimensions two and four

showed no significant differences. Future research assessing the medical students' attitudes toward pharmacological treatment options particularly analgesics might help to understand the results obtained.

Finally, we recommend raising awareness about CLBP guidelines among medical students and the society, involving CLBP guidelines in our curriculum, and lastly, providing proper campaigns about CLBP for the general population.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

ACKNOWLEDGEMENT

The authors thank Ahmad Alhibshi and Abdullah Alotabi who helped us with data collection. We also thank the research summer school for helping us.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. *Best Pract Res Clin Rheumatol.* 2010;24(6):769-81.
2. Pavelka K, Jarosova H, Sleglova O, Svobodova R, Milani L, Votavova M, et al. Chronic low back pain: Current pharmacotherapeutic therapies and a new biological approach. *Curr Med Chem;* 2018.
3. Andersson GB. Epidemiological features of chronic low-back pain. *The Lancet.* 1999;354(9178):581-5.
4. Alshami AM, Albahrani YA. A comparison of the attitudes toward chronic low back pain in Saudi, Australian and Brazilian physical therapy students. *J Taibah Univ Med Sci.* 2015;10(2):181-7.
5. Meucci RD, Fassa AG, Faria NM. Prevalence of chronic low back pain: Systematic review. *Revista de Saúde Pública.* 2015;49:73.
6. Clark S, Horton R. Low back pain: A major global challenge. *The Lancet;* 2018.
7. Manchikanti L, Singh V, Falco FJ, Benyamin RM, Hirsch JA. Epidemiology of low back pain in adults. *Neuromodulation.* 2014;17(S2):3-10.
8. Guzmán J, Esmail R, Karjalainen K, Malmivaara A, Irvin E, Bombardier C. Multidisciplinary rehabilitation for chronic low back pain: Systematic review. *BMJ.* 2001;322(7301):1511-6.
9. Freburger JK, Holmes GM, Agans RP, Jackman AM, Darter JD, Wallace AS, Castel LD, Kalsbeek WD, Carey TS. The rising prevalence of chronic low back pain. *Arch Intern Med.* 2009;169(3):251-8.
10. Ryan CG, Schofield P, Martin DJ. Therapy students' recommendations of physical activity for managing persistent low back pain in older adults. *J Aging Phys Act.* 2013;21(3):309-18.
11. Chenot JF, Greitemann B, Kladny B, Petzke F, Pflingsten M, Schorr SG. Non-specific low back pain. *DtschArztebl Int.* 2017;114(51-52):883.
12. Gore M, Sadosky A, Stacey BR, Tai KS, Leslie D. The burden of chronic low back pain: clinical comorbidities, treatment patterns, and health care costs in usual care settings. *Spine.* 2012;37(11):E668-77.
13. Thompson, Trevor, et al. Efficacy and acceptability of pharmacological and non-pharmacological interventions for non-specific chronic low back pain: A protocol for a systematic review and network meta-analysis. *Systematic reviews.* 2020;9:1-11.
14. Morris H, Ryan C, Lauchlan D, Field M. Do medical student attitudes towards patients with chronic low back pain improve during training? A cross-sectional study. *BMC medical education.* 2012;12(1):10.
15. Bishop A, Foster NE, Thomas E, Hay EM. How does the self-reported clinical management of patients with low back pain relate to the attitudes and beliefs of health care practitioners? A survey of UK general practitioners and physiotherapists. *PAIN®.* 2008;135(1-2):187-95.
16. Magalhaes MO, Costa LO, Cabral CM, Machado LA. Attitudes and beliefs of Brazilian physical therapists about chronic low back pain: a cross-sectional study.

- Revista Brasileira de Fisioterapia. 2012;16(3):248-53.
17. Latimer J, Maher C, Refshauge K. The attitudes and beliefs of physiotherapy students to chronic back pain. Clin J Pain. 2004;20(1):45-50.
 18. Wilson JF, Brockopp GW, Kryst S, Steger H, Witt WO. Medical students' attitudes toward pain before and after a brief course on pain. Pain. 1992;50(3):251-6.
 19. Lasch K, Greenhill A, Wilkes G, Carr D, Lee M, Blanchard R. Why study pain? A qualitative analysis of medical and nursing faculty and students' knowledge of and attitudes to cancer pain management. J Palliat Med. 2002;5(1):57-71.
 20. Awaji M. Epidemiology of low back pain in Saudi Arabia. J Adv Med Pharm Sci. 2016;6(4):1-9.
 21. Rainville J, Bagnall D, Phalen L. Health care providers' attitudes and beliefs about functional impairments and chronic back pain. Clin J Pain. 1995;11(4): 287-95.

© 2021 Alotaibi; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/69733>