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The effectiveness of social media and in-person interventions for low back pain conditions in nursing personnel (SMILE)

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Abstract

Aim: To compare two educational approaches to reduce low back pain in nurses.

Design: A community randomized controlled clinical trial.

Methods: Data were collected with two interventions and a control arm between August 2018 and January 2019. Participants were recruited from three hospitals. Hospital 1 received an in-person educational programme, Hospital 2 received via the website and Hospital 3 received nothing. Statistical analysis was carried out with a follow-up of 3 and 6 months.

Results: A total of 180 female nurses with low back pain participated in the study. Dimensions of the quality of life improved over 3 and 6 months, pain and disability decreased over 3 months in both intervention groups and over 6 months in the social media group.

Conclusion: Two educational approaches can be effective in decreasing pain, disability and improving quality of life. However, the findings suggest that the social media approach was more successful over the long-term and might be a better way to present the programme.

KEYWORDS
disability, in-person, nurse, occupational low back pain, quality of life, social media

1 | INTRODUCTION

Low back pain is associated with a lower health-related quality of life (Ludwig et al., 2018) increased functional disability (Kovacs et al., 2011) and increased time off work (Ferguson et al., 2019). It is the leading cause of activity limitation and work absence worldwide, imposing a high economic burden on individuals, families, communities and governments (Chhabra et al., 2018). So, its prevention is a priority (del Pozo-Cruz et al., 2012). Low back pain is the most common work-related health problem and its prevalence is high among nursing personnel (Yassi & Lockhart, 2013). Various studies investigated the effectiveness of different educational interventions on reducing low back pain in nurses (Parreira et al., 2017; Toelle et al., 2019; Van Der Beek et al., 2017). Using an educational method depends on the target group. A particular education method can be appropriate and efficient when it is related to the characteristics of the learner and the type of learning (Flunger et al., 2017; Westwood, 2008). There are different strategies that

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have been employed to implement professional development through educational programmes using electronic (mobile, message and website) and in-person (lectures and role-playing) education methods.

1.1 | Background

According to the World Health Organization, low back pain (LBP) is the leading cause of disability worldwide with a global prevalence of 7.2% (Vos et al., 2017). In Europe and the United States, LBP is the most frequently occurring occupational health problem (Hasegawa et al., 2018). Occupational LBP results in considerable medical expenses (Lambeek et al., 2011; Lin et al., 2012), work absenteeism (Kamper et al., 2015) and the loss of work salary (Lin et al., 2012).

As LBP is the most common work-related health problem, unsurprisingly there is a high prevalence among healthcare employees, especially nurses (Hignett, 1996; June & Cho, 2011; Yassi & Lockhart, 2013). The overall prevalence of LBP among nurses ranges from 35%–80% (Járomi et al., 2018; Pakbaz et al., 2019; Parreira et al., 2017; Soroush et al., 2018; Van Hoof et al., 2018). The prevalence of LBP in Iranian nurses was reported to be 64.8% (Mohammadi et al., 2019).

There are several risk factors for developing low back pain including lifestyle (Shiri et al., 2019) and occupational risk factors (Fingerhut et al., 2006; Schaafsma et al., 2015). Therefore, design and implementation of occupational health education programmes such as work-related low back pain educational interventions may play an important role in primary and secondary prevention. Various studies investigated the effectiveness of different educational interventions on reducing work-related musculoskeletal disorders such as low back pain (Parreira et al., 2017; Van Der Beek et al., 2017) especially in nurses (Salah et al., 2012; Smedley et al., 2003; Toelle et al., 2019). Studies have shown educational programmes are effective in reducing musculoskeletal and low back pain in nurses such as in Iranian nurses (Pakbaz et al., 2019; Serra et al., 2019).

There are barriers that limit nurses' participation in education. For instance, time constraints, lack of classrooms in hospitals, several job commitments and the costs for the educator (Kazemi et al., 2019). The use of social media interventions may be able to overcome these limitations. Given the increase in the use of technologies to enhance health services (Irvine et al., 2015), social media has emerged as a potential alternative to implement interventions for LBP (Dario et al., 2017; Garg et al., 2016). Social media interventions have become increasingly popular in public health and several studies showed that they were a promising platform for promoting healthy behaviours, especially when they were theory-based (Garg et al., 2016; Jahangiry et al., 2015; Karlsen et al., 2016).

The aim of this study was to compare an educational intervention based on the PRECEDE-PROCEED model to reduce occupational low back pain in nurses using in-person and social media approaches, with a no-intervention control. Indeed, the in-person group is being compared with the social media group and each one compared with the control group. The selection of this model however was due to the fact that the PRECEDE-PROCEED model has a good potential to design, implement and evaluate public health interventions. This model includes a range of behavioural and environmental factors that are integrated into each other and could provide a full picture of requirements that are needed to improve health (Freire & Runyan, 2006; Gielen et al., 2008; Glanz et al., 2015; Green & Kreuter, 1991). Its use leads to planning interventions that are specifically targeted to these desired outcomes. This model can determine the causes of performing or not performing health behaviours. As well, the PRECEDE-PROCEED model determines the reinforcing and enabling factors in performing and maintaining health behaviour (Glanz et al., 2015). Indeed, according to the PRECEDE-PROCEED model, three categories of factors change behaviour: predisposing factors, reinforcing factors and enabling factors (Green, 2005). Each of these factors will have different effects on behaviour, but a combination of these is needed to change behaviour (Green, 2005). In other words, factors that affect participation in health-promoting behaviours include those that are internal or intrinsic to the individual and those that are environmental or extrinsic (Pender, 2011; Seifert et al., 2012). Intrinsic factors that influence whether one engages in health-promoting activities include personal characteristics, knowledge, attitude, value and self-efficacy. Extrinsic factors include situational and interpersonal influences, reinforcing factors such as social relationship, reward and satisfaction from adopting the behaviour, enabling factors such as managers' support, existence and use of resources (Green, 2005).

2 | THE STUDY

2.1 | Design

This community randomized controlled trial was conducted between August 2018 and January 2019 when three eligible and consenting selected hospitals were randomly allocated by the roll of a dice to two intervention settings and one control setting. The intervention settings received the educational programme while the control setting received nothing. Participants were assessed at three points in time: baseline, three and six months after the intervention or control period.

2.2 | Methods

2.2.1 | Study setting and procedure

The study was conducted in hospitals of Mazandaran University of Medical Sciences, Sari, Iran where the prevalence of LBP among nurses is over 50% (Mohseni-Bandpei et al., 2006). The selection of the participating hospitals was by random allocation. The name of

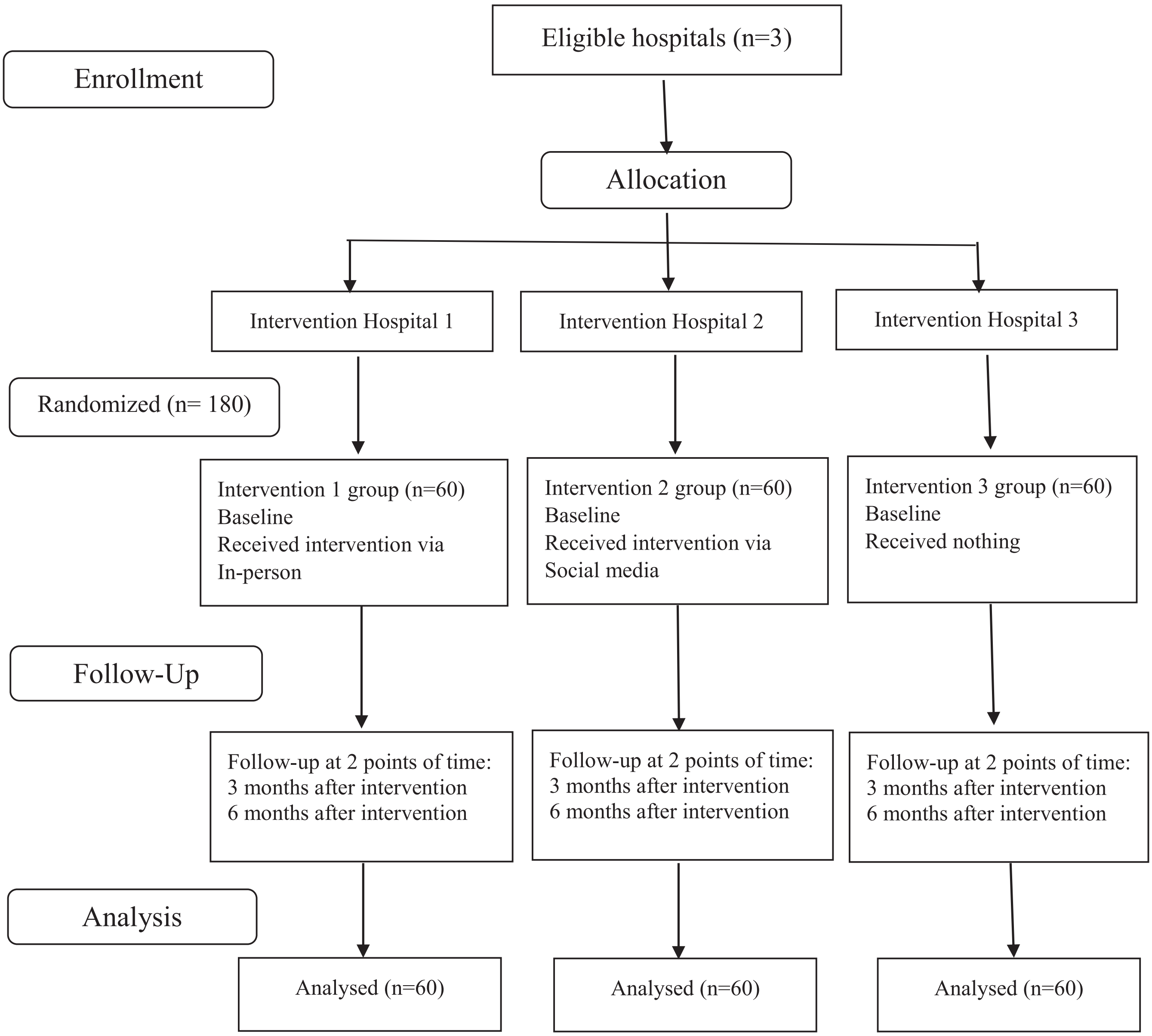

FIGURE 1 Flowchart and overview of the trial

eligible hospitals (N = 6) was written on individual cards and placed in a box. The box was shaken, and three cards were selected. The selected hospitals were then allocated to intervention and control settings based on the roll of a dice. To ensure allocation concealment, randomization to groups was undertaken by a blinded remote investigator not involved in recruitment. First, the training programme was announced through bulletin boards in hospitals. Nurses who wished to participate were registered in the nursing office by the educational supervisor. Then, each hospital sent a list of ID' registered nurses to the study coordinator. The coordinator re-coded the IDs to number 1-300. A random number table using these numbers was generated. The coordinator contacted the nurses in order of the random table and then assessed them for eligibility and consent. This process continued until the sample size of 60 in each group was reached.

2.2.2 | Sample/participants

The participants were nurses working in the three hospitals. All participants signed written informed consent.

2.2.3 | Inclusion and exclusion criteria

Participants with low back pain were identified using an interview by the main investigator and examined by a specialist (physician) in occupational medicine. Inclusion criteria were: having current work-related low back pain* (6–12 weeks or more than 12 weeks), having access and skill to use a mobile phone and Internet. Exclusion criteria included: having an illness or problems that prevented participation in the study, being pregnant, having pathological low back pain**, taking a prescription medication for low back pain.

* The meaning of work-related low back pain is related to poor ergonomics like prolonged awkward posture, repetitive bending, prolonged sitting, physical or psychological stress in the workplace.

** Pathological low back pain such as radicular pain, facet joint pain, sacroiliac pain, pain related to lumbar stenosis, discogenic pain.

2.2.4 | Data collection

Demographic information was collected via a questionnaire. The pain was assessed using the Visual Analog Scale (VAS), disability with The Quebec Back Pain Disability Scale (QBPDS) and Quality of Life with the SF-36. The questionnaires were completed by nurses at 3-time points; before intervention, 3 months and 6 months after intervention. Figure 1 shows the CONSORT statement and the extension for randomized trials were used to describe the design of the study (Altman et al., 2001; Schulz et al., 2010). The study protocol was published elsewhere (Solhi et al., 2014).

2.2.5 | Educational intervention

An educational intervention was developed based on the PRECEDE-PROCEED model. The final programme consisted of: ergonomic and correct position of the spine in daily work, stretching exercises to increase flexibility, strengthening exercises to increase muscle strength and the effect LBP on quality of life. The education implementation time was set with the coordination of the nursing manager and educational supervisor at each hospital.

2.2.6 | Implementation of intervention

Participants in the intervention hospital 1, received the in-person education content. At the first session and before the education intervention, participants completed the demographic, VAS, QBPDS and SF-36 questionnaires. Participants received the education content in two sessions of 60 min, which included group discussions, role-playing, question/answer and lectures. At the first session, the education content included: education about spine health and ergonomic training. In the second session, content included: exercises for back pain such as flexibility and strengthening exercises and the effect of LBP on quality of life. A reminder text message was sent to this group every week via mobile phone for non-verbal encouragement.

Participants in intervention hospital 2 (interactive social media group), received educational content by website. Social media was designed in social media format and mobile app. Before the intervention implementation, a meeting was set up for participants and devoted to how to access the social media and educational content and to complete the questionnaires.

TABLE 1 The demographic description of the participants

	In-person (N = 60)	Social media (N = 60)	Control (N = 60)
Age mean (*SD*)	36 (5.84)	37 (5.74)	36.98 (7.80)
Height mean (*SD*)	161.77 (6.64)	162.10 (6.77)	162.70 (6.55)
Weight mean (*SD*)	65.92 (11.70)	66.25 (11.70)	66.77 (6.54)
BMI mean (*SD*)	25.09 (3.36)	25.07 (3.09)	25.20 (3.01)
Work experience mean (*SD*)	12.08 (5.91)	12.23 (5.00)	12.68 (7.46)
Work hours mean (*SD*)	48.45 (8.14)	49.90 (19.38)	49.05 (10.59)
Education level (%)			
Associate	2 (3.3)	1 (1.7)	0
Bachelor	51 (85)	53 (88.3)	49 (81.7)
Master	7 (11.7)	6 (10)	11 (18.3)

The content of the education was uploaded to the site on two days and at a specified time, like the in-person intervention. Every week a reminder message was sent through the social media to encourage the participants to use the social media or app and ask if they have any questions or have difficulty in understanding the content. They were also encouraged to continue the exercises (flexibility and strengthening exercises).

2.2.7 | Outcome assessment

The primary outcome was the reduction of low back pain. The secondary outcomes were the reduction of disability and improvement of quality of life.

2.2.8 | Validity and reliability

The primary and secondary outcomes measures were collected using the following instruments.

Low back pain assessed by the VAS. The VAS is a well-known measure of pain intensity (McCormack et al., 1988), which has been widely used in different adult populations (Hawker et al., 2011). It is a continuous scale comprised, usually 10 centimetres (100 mm) in length, anchored by two verbal descriptors ranging from none (score of 0) to worse condition (score of 100) (Hawker et al., 2011; Jensen et al., 1986). In this study, we used a 100 mm straight line to assess pain intensity using the usual anchors. Disability and quality of life assessed by the Quebec Back Pain Disability Scale (QBPDS) and the Short Form Health Survey (SF-36) questionnaires respectively.

The QBPDS is a 20-item instrument designed to assess the level of functional disability in individuals with back pain. Each item

TABLE 2 Pain, disability and quality of life scores for the in-person, social media intervention and control group at baseline (Mean [*SD*])

	In-person	Social media	Control	*p*
Pain (*VAS*)	5.55 (2.33)	5.56 (2.02)	5.53 (2.06)	.99
Disability (*Quebec*)	30.53 (10.17)	31.87 (12.95)	31.05 (14.56)	.84
Quality of life (SF−36)				
Physical Functioning	59.75 (19.05)	59.83 (19.97)	58.08 (23.39)	.87
Role Physical	57.50 (18.58)	57.08 (19.02)	57.50 (36.03)	.99
Bodily Pain	45.93 (13.01)	45 (12.51)	46.30 (14.77)	.86
General Health	46.25 (12.40)	46.42 (10.41)	47 (11.76)	.93
Vitality	52.50 (14.15)	52.25 (15.47)	52.83 (17.85)	.98
Social Functioning	56.04 (13.51)	55.63 (12.48)	55 (14.59)	.91
Role Emotional	51.11 (30.35)	51.67 (24.87)	50.56 (33.88)	.98
Mental Health	56.67 (16.60)	57 (15.45)	56.27 (17.75)	.97

[a]Derived from one-way between-groups ANOVA.

TABLE 3 Visual Analog Scale scores for the in-person, social media intervention and control group across the three time periods

	Baseline	3-month follow-up	6-month follow-up		
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	p^a	CI
In-person	5.55 (2.33)	4.60 (1.19)	4.62 (1.65)	.01	4.6–5.2
Social media	5.56 (2.02)	3.54 (1.57)	3.37 (1.79)	<.0001	3.8–4.4
Control	5.53 (2.06)	5.54 (1.75)	5.62 (1.67)	.77	5.2–5.8
p^b	.99	<.0001	<.0001		

[a]Derived from one-way repeated measures ANOVA

[b]Derived from one-way between-groups ANOVA.

TABLE 4 Disability scores for the in-person, social media intervention and control group across the three time periods

	Baseline	3-month follow-up	6-month follow-up		
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	p^a	CI
In-person	30.53 (10.17)	23.30 (14.03)	23.35 (11.21)	<.0001	23.5–27.9
Social media	31.87 (12.95)	23.03 (12.67)	19.38 (13.60)	<.0001	22.5–26.9
Control	31.05 (14.56)	31.58 (13. 17)	31.17 (14.52)	.02	29–33.4
p^b	.84	.001	<.0001		

[a]Derived from one-way repeated measures ANOVA

[b]Derived from one-way between-groups ANOVA.

is rated on a 5-point Likert scale ranging from 0–5 giving a total score of 20 to 100. Higher scores indicate greater disability (Kopec et al., 1995). The validity and reliability of the Iranian version of the questionnaire were reported elsewhere (Mousavi et al., 2006). The SF-36 is a very popular generic measure of health and health-related quality of life (Ware & Sherbourne, 1992) and consists of 36 items tapping into eight sub-scales: physical functioning, role physical, bodily pain, general health, social functioning, vitality, role emotional and mental health. Each subscale could take a score ranging from 0–100. A higher score represents a better condition. The questionnaire has been validated in Iran (Montazeri et al., 2005).

2.3 | Data analyses

Continuous data were expressed as means (standard deviations). A Shapiro–Wilk test with skewness-kurtosis was used to test the normal distribution of values. One-way analysis of variance (ANOVA) was used to compare groups at baseline. When normally distributed, continuous variables were tested with mixed between-within subject analysis of variance (Bonferroni adjustments). Also, repeated measures analysis was used to compare each group at three point assessments. For non-normal distributions, alternative non-parametric tests were used. Additionally, Pearson-correlation was used to determine the relationship between low back pain and disability. All data were analysed with SPSS IBM Statistics version 23.

2.4 | Ethical considerations

The Ethics Committee approval was obtained from Tarbiat Modares University (IR. TUM. REC 2017/545).

3 | RESULTS

3.1 | Participants and descriptive data

The participants were 180 female nurses (mean age of 36.66 (6.51) years, mean height of 162.19 (6.62) cm, mean weight of 66.31 (10.22) kg and mean BMI 25.12 (3.01)). Demographic data of the sample is provided in Table 1. There were no significant differences between the three groups at baseline (p > .05) (Table 2). Tables 3, 4 and 5 display evaluation of the educational intervention on pain, disability and quality of life over the 3- and 6-month follow-up in three groups.

3.2 | Main results

We used mixed between-within analysis to compare between the three groups across the three time periods. The data in pain and disability were not normally distributed, so we calculated change scores which were normally distributed. The results of the mixed between-within analysis for pain change scores showed there was a significant difference between the two intervention groups and the control group. Pain change scores decreased at 3 months in both intervention groups and at 6 months in the social media group compared with controls (p<.0001, η = 0.10) (Table 6). Disability change scores significantly decreased compared with the control group, at 3 months in both intervention groups and at 6 months in the social media group (Table 7) while the control group did not change (p<.0001, η = 0.11).

The distribution of three dimensions of quality of life (physical functioning, vitality and mental health) was normal. The results of the mixed between-within analysis for 3-dimensions showed there was a significant difference between groups. Physical functioning (p = .03), vitality (p = .005) and mental health (p = .03) improved at 3 and 6 months in both intervention groups (Table 8) compared with the control group. The other four quality of life dimensions' distributions were not normal even when change scores were calculated, so two-sample tests were performed using the Mann–Whitney U test.

Other dimensions also improved over 3 and 6 month in both intervention groups (Table 9). While the control group did not change. Based on Bonferroni post hoc analysis there was a difference between the intervention types. Indeed, social media intervention was more successful in decreasing pain and disability (p < .0001) and improving some dimensions of quality of life such as physical

TABLE 5 Quality of life (SF-36) scores for the in-person, social media intervention and control group across the three time periods (Mean [SD])

	In-person			Social media			Control group		
	Baseline	3 month	6 month	Baseline	3 month	6 month	Baseline	3 month	6 month
Physical Functioning	59.75 (19.05)	65 (20.23)	65.75 (14.92)	59.83 (19.97)	64.58 (19.36)	69.58 (17.1)	58.08 (23.39)	57.5 (23.17)	58.5 (23.85)
Role Physical	57.5 (18.58)	67.92 (30.56)	67.5 (16.78)	57.08 (19.02)	68.33 (27.56)	69.58 (18.46)	57.50 (36.03)	56.67 (38.74)	57.08 (37.42)
Bodily Pain	45.93 (13.01)	51.58 (10.36)	53.89 (9.77)	45 (12.51)	54.07 (11.65)	60.56 (10.71)	46.30 (14.77)	47.22 (17.90)	46.48 (17.53)
General Health	46.25 (12.4)	50.42 (15.52)	51.33 (11.99)	46.42 (10.41)	51.58 (14.42)	59.42 (14.32)	47 (11.76)	46.67 (19.67)	45.58 (13.75)
Vitality	52.5 (14.15)	57.75 (16.65)	63.67 (15.42)	52.25 (15.47)	57.58 (16.65)	66.50 (13.84)	52.83 (17.85)	52.25 (17.64)	53.08 (18.01)
Social Functioning	56.04 (13.51)	61.04 (17.08)	62.71 (13.51)	55.63 (12.48)	62.71 (16.67)	68.54 (12.06)	55 (14.59)	53.54 (15.28)	55.83 (20.9)
Role Emotional	51.11 (30.35)	55 (27.32)	55.56 (24.29)	51.67 (24.87)	58.33 (25.76)	60 (26.61)	50.56 (33.88)	51.67 (32.72)	50 (32.18)
Mental Health	56.67 (16.6)	60.8 (16.39)	63.27 (15.99)	57 (15.45)	62.93 (17.50)	66.27 (15.76)	56.27 (17.75)	56.53 (17.62)	56.47 (17.89)

TABLE 6 The difference in mean scores of VAS for the in-person, social media intervention and control group across the three time periods (Mean [*SD*])

	Change score between 3-month follow-up and baseline	Change score between 6-month follow-up and 3-month follow-up	p^a	η
In-person	−0.95 (2.45)	0.02 (1.96)	<.0001	.10
Social media	−2.02 (2.58)	−0.17 (2.28)		
Control	0.01 (2.62)	0.11 (1.22)		

[a]Derived from mixed between-within subject analysis of variance (Bonferroni adjustments).

TABLE 7 The difference in mean scores of disability for the in-person, social media intervention and control group across the three time periods (Mean [*SD*])

	Change score between 3-month follow-up and baseline	Change score between 6-month follow-up and 3-month follow-up	p^a	η
In-person	−7.23 (14.17)	0.05 (16.59)	<.0001	.11
Social media	−8.83 (17.21)	−3.65 (17.83)		
Control	0.53 (20.98)	−0.41 (20.97)		

[a]Derived from mixed between-within subject analysis of variance (Bonferroni adjustments).

functioning ($p = .03$, $\eta = 0.04$), vitality ($p = .005$, $\eta = 0.06$), mental health ($p = .03$, $\eta = 0.06$) and bodily pain ($p < .05$).

4 | DISCUSSION

The two intervention approaches were successful in reducing pain and disability and improving quality of life in nurses with low back pain. But the social media intervention was more successful than the in-person intervention. social media use is increasing in public health and health promotion because it can remove traditional access barriers (Welch et al., 2016). Evidence from systematic reviews suggests that social media facilitates interaction with other users and effectively improves knowledge, health behaviours and outcomes (Dario et al., 2017; Garg et al., 2016; Moorhead et al., 2013).

The reduction in low back pain is supported by results of other studies (Hurley et al., 2019; Nevedal et al., 2013; Rutledge et al., 2018; Smedley et al., 2003). For instance, Pakbaz et al. (2019) investigated the effectiveness of a face-to-face intervention (back school programme) on low back pain and functional disability in Iranian nurses and found that the programme reduced LBP and functional disability over a 2-month period (Pakbaz et al., 2019). Chen et al. (2014) reported that stretching exercises delivered in-person, resulted in significantly lower pain scores (VAS) at two, four and six-month follow-up compared with the control group in nurses with low back pain (Chen et al., 2014).

Toelle et al. (2019) investigated the clinical effects of a multidisciplinary mHealth back pain App (Kaia App) in a randomized controlled trial. They found that the Kaia App was an effective treatment in LBP patients over 3 months and was superior to physiotherapy in combination with online education (Toelle et al., 2019). Another study determined that an interactive self-management social media for people with chronic back pain lead to improvements in pain (Chiauzzi et al., 2010). Irvine et al., (2015) demonstrated that a theoretically based stand-alone mobile-web intervention was an effective measure in self-management of low back pain and improving the quality of life. The results indicated greater improvement of self-manage low back pain in users of the Mobile-Web Application program (FitBack) compared with another two groups receiving materials via e-mail or receiving nothing (Irvine et al., 2015).

The two educational delivery methods were successful in reducing low back pain and disability over 3 months and the social media group was successful over 6 months. Various studies have demonstrated that different interventions could reduce back pain and disability (Baez et al., 2018; Garcia et al., 2011; Sezgin & Esin, 2018). Rasmussen et al. (2015) study showed in-person educational intervention is beneficial for the treatment of patients with chronic non-specific low back pain (Rasmussen et al., 2015). Likewise, O'Brien et al. (2018) in a systematic review indicated that compared with usual care, telephone-based interventions were more effective in reducing low back pain and disability. However, the same review reported that telephone-based intervention plus face-to-face intervention were no more effective than face-to-face interventions or usual care only (O'Brien et al., 2018).

We found that social media intervention was more successful than the in-person intervention for decreasing low back pain and disability over the 6-month follow-up. This result is supported by Del Pozo-Cruz et al. (2012) study who found that a 9-month web-based intervention decreased low back pain and disability among office workers with a history of non-specific low back pain (Del Pozo-Cruz et al., 2012). Krein et al. (2013) found that an Internet-mediated

TABLE 8 Physical functioning, vitality and mental health scores for the in-person, social media intervention and control group across the three time periods [Mean (*SD*)]

	In-Person			Social Media			Control				
	Baseline	3month	6month	Baseline	3month	6month	Baseline	3month	6month	p^a	η
Physical functioning	59.75 (19.05)	65 (20.23)	65.75 (14.92)	59.83 (19.97)	64.58 (19.36)	69.58 (17.10)	58.08 (23.39)	57.50 (23.17)	58.50 (23.85)	.03	0.04
Vitality	52.50 (14.15)	57.75 (16.65)	63.67 (15.42)	52.25 (15.47)	57.58 (16.65)	66.50 (13.84)	52.83 (17.85)	52.25 (17.64)	53.08 (18.01)	.005	0.06
Mental health	56.67 (16.60)	60.80 (16.39)	63.27 (15.99)	57 (15.45)	62.93 (17.50)	66.27 (15.76)	56.27 (17.75)	56.53 (17.62)	56.47 (17.89)	.03	0.04

[a]Derived from mixed between-within subject analysis of variance (Bonferroni adjustments).

TABLE 9 Change scores for the in-person, social media intervention and control group across the three time periods (Mean [*SD*])

	Month 3- baseline			Month 6- month 3		
	In-person	Social media	Control	In-person	Social media	Control
Role physical	10.41 (33.6)[*b]	11.25 (31.02)[*c]	−0.83 (26.02)	−0.41 (32.70)	1.25 (28.9)	0.41 (33.02)
Bodily pain	5.92 (17.05)	9.07 (17.89)[*c]	0.92 (19.75)	2.03 (8.30)[*b]	6.48 (9.87)[*acd]	−0.74 (2.79)
General health	4.16 (20.83)	5.16 (18.63)	−0.33 (16.36)	0.91 (21.34)	7.83 (20.87)[*c]	−1.08 (20.81)
Social functioning	5 (22.09)[*b]	7.08 (21.38)[*c]	−1.45 (6.12)	1.66 (12.06)	5.83 (18.33)	2.29 (26.18)
Role emotional	3.88 (12.41)	6.67 (13.44)[*c]	1.11 (6.03)	0.55 (14.38)	1.66 (11.35)[*c]	−1.67 (7.32)

Note: Based on Mann–Whitney *U* test.
[*a]*p*-value < .05; In-person: Social media
[*b]*p*-value < .05; In-person: Control
[*c]*p*-value < .05; Social media: Control
[*d]*p*-value for multiple comparisons < 0.002; Social media: Control.

intervention had a greater decrease in back pain-related disability in the 6 months compared with those received usual care (Krein et al., 2013).

The educational intervention approaches were effective in improving the quality of life among nurses who suffer from lower back pain. It seems in our study the effects of social media intervention were more successfully than the in-person intervention for the long-term in improving the quality of life. While the in-person intervention had a positive effect on outcomes over the 3-month follow-up, but in the long-run, its effect diminished. Social media was more effective and successful in physical functioning, vitality, mental health and bodily pain at the 6-month follow-up. Other studies have shown the positive impact of educational interventions, especially web-based interventions, on improving the quality of life of people with pain and LBP (Agboola et al., 2015; Galiano-Castillo et al., 2016). Del Pozo-Cruz et al. (2012) study showed that the intervention group (Web-Based Intervention) improved function and health-related quality of life at the 9-month follow-up compared with the control group (Del Pozo-Cruz et al., 2012).

4.1 | Limitations

One limitation was that only female nurses were included in the study, so future work should investigate whether the same effect is found in male nurses. Also, although the participants were blinded to the group assignment, it might be possible that participants identified another intervention group due to work relationships.

5 | CONCLUSION

The findings suggest that social media approach was more successful than the in-person intervention over the long-term and might be a better way to present a programme due to its ease of access and decreased implementation costs. The educational programme is a guideline for individuals and can lead to reducing low back pain. Suitable educational methods can be a reinforcing factor for individuals and the workforce. Also, the choice of the educational method according to the conditions and policies of the workplace is also important. The global impression of change in pain and function study is suggested in future studies.

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CONFLICTS OF INTERESTS

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

SSK was the main investigator, collected and analysed the data, and wrote the first draft. SST supervised the study and contributed to the writing process. CH contributed to drafting, editing and interpretation of data. AH helped in the design and contributed to the writing process. AM was the study advisor, contributed to analysis and interpretation, and provided the final draft. All authors read and approved the final manuscript.

DATA AVAILABILITY STATEMENT

The data will be available from the corresponding author on request.

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