


A Systematic Review of Randomized Controlled Trials on Interventions Adopting Body-Mind-Spirit (BMS) Model on Holistic Well-Being

Tongtong Li, MHA, MS^{1,2,5,6} , Xinyue Hu, MS³,
 and Iris Chi, DSW^{4,5,6}

Abstract

Background: This systematic review aims to examine existing randomized controlled trials on interventions adopting Body-Mind-Spirit (BMS) model and evaluated the effectiveness of holistic well-being outcomes. Following three key concepts of the BMS model, our review questions included (1) How was BMS defined? (2) What activities were included, and how were they related to BMS dimensions? (3) What were interventionists' backgrounds, and whether they received BMS training? (4) What were holistic outcomes? and (5) What were the effectiveness and qualities of studies?

Methods: Searches were performed using nine databases for the studies published through August 2020. The process follows PRISMA protocol, and the "risk of bias" tool from the Cochrane Handbook was utilized to determine the quality of included studies.

Results: Across 20 included studies, 18 (90%) presented a BMS definition, but only seven (35%) included all three key concepts of the BMS model. Eight studies (40%) offered detailed descriptions of body, mind, and spirit sections, and 12 (60%) mentioned cultural factors. Only five (25%) specified the body, mind, and spirit activities, and only three (15%) reported the BMS training in detail. Seven studies (35%) showed effectiveness in holistic outcomes. Only three (15%) were considered as high quality.

Conclusion: A unified definition of the BMS model and the guideline to apply the BMS model to design and implement interventions are highly recommended to provide a standard framework for researchers to conduct future studies. The reason for low quality is because the lack of adequate allocation concealment and blindings.

Keywords

Systematic Review, Body-Mind-Spirit, BMS, Holistic, Integrative

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Introduction

Holistic health is a state of internal balance, not just an absence of illness,¹ and emphasizes the importance of the connection of the mind, body, and spirit (BMS).² The concept of BMS in holism has been in practice worldwide for thousands of years in diversified philosophies and cultures, such as Taoism, Buddhism, Ayurveda, African and Hawaiian culture, and Greek philosophy.^{3,4} However, those holistic treatment methods were gradually replaced by the development of modern medicine.⁵ The situation changed when the Holistic Health Movement (HHM) occurred during the New Age, promoting whole-person oriented healing.^{6,7} Since then, BMS has caught the attention of many practitioners and researchers,

¹ Leonard Davis School of Gerontology, University of Southern California, Los Angeles, CA, USA

² Price School of Public Policy, University of Southern California, Los Angeles, CA, USA

³ College of Social Science, University of California, Los Angeles, Los Angeles, CA, USA

⁴ School of Law, Shanghai Lixin University of Accounting and Finance, Shanghai, China

⁵ Suzanne Dworak-Peck School of Social Work, University of Southern California, Los Angeles, CA, USA

⁶ Edward R. Roybal Institute on Aging, University of Southern California, Los Angeles, CA, USA

Corresponding Author:

Tongtong Li, 501 Forest Ave, Palo Alto, CA 94301, USA.
 Email: tongtongli3699@gmail.com



and become an essential aspect in many professions such as nursing and social work.⁸ Nevertheless, there was no consolidated definition of BMS and of what should be included in BMS dimensions respectively, and how to properly apply this model to develop interventions that promote holistic well-being.

One BMS model that has been frequently referred to was established by the team led by Dr Cecilia L.W. Chan in the University of Hong Kong (HKU) in the late 1990s,⁹ who was also the first person to apply the BMS model in randomized controlled trial (RCT) studies and co-founded the BMS team in the Center of Behavioral Health (CBH) at HKU. Their definition of the BMS model was also called Eastern BMS (EBMS) model and Integrative BMS (I-BMS) model.^{3,10} Regardless of the different names, BMS model is defined as an approach to include BMS dimensions in treatments, which “assume(s) the dynamic balance of an interrelationship among BMS as fundamental to health, mental health, and the well-being of individuals”.^{11(p65)} Three key concepts are presented in the definition of the BMS model. Firstly, the BMS model contains three dimensions: body, mind, and spirit. Secondly, those three dimensions are interrelated. Thirdly, the BMS model highlights the “holistic” concept reflected in both treatments and outcomes. Every key concept is indispensable in the BMS model and is imperative to be contained in program development and implementation.

In terms of what each dimension of the BMS model contains, the BMS team of CBH demonstrated that “the physical body includes sensation, energy, physical strength, body functioning, physiological responses, etc; the mind includes cognition, perception, mood, affection, problem-solving ability, memory, willpower, etc; the spirituality contains meaning, life goals, morality, values, commitment and fulfillment, relationship with higher being and cosmos”.^{10(p65)} The interrelation among BMS is another key concept in the definition. The mind and the body are interconnected,¹¹ and the body, mind, emotions, cognition, values reflect diversified perspectives of a holistic self.¹² Nevertheless, how studies presented the interconnection of BMS in their model demonstration and study design was not clear, which aroused our interest to focus on this topic.

Although Lee et al¹⁰ provided a recommended list of activities included for three BMS dimensions, researchers seem to keep divergent understandings towards what activities are qualified to include in the interventions that applied BMS model.^{13,14} With various perceptions of activities’ functions and categories, it is crucial to grasp how researchers could make sure their interventions contain a set of activities that covered all three dimensions. Meanwhile, offering the BMS training for interventionists is necessary,¹⁵ but currently there is no guideline in consensus regarding the requirement to offer the BMS training for interventionists, not to mention the format and length of the training.

In order to demonstrate the overall effectiveness of the interventions that adopt the BMS model, it is necessary to include holistic outcomes, either general holistic ones or outcomes of all three BMS dimensions, and to examine their effectiveness. Currently, there is no systematic review about the BMS

model at all, and there are only three existing outcome literature reviews about BMS.^{13,16,17} None of those focused on holistic intervention and outcomes: Lee et al¹⁶ focused on mental health conditions, while Wang et al¹³ and Liu et al¹⁷ included studies with only one or two dimensions of outcomes. All three reviews included other interventions using single complementary health approaches in their search terms, such as yoga, tai qi and reiki, without any potent justification of the reason why they were qualified as holistic interventions, and why other complementary health approaches were not included.

The objective of this systematic review was to examine existing intervention studies on any population that applied the BMS model and evaluated the effectiveness of holistic well-being outcomes, which must include body, mind, and spiritual dimensions. We concentrated on the following five research questions: (1) How were BMS definitions presented, and were they influenced by cultural or philosophical values? (2) What activities were included in interventions that adopted the BMS model, and how were they related to BMS dimensions? (3) What were interventionists’ backgrounds, and was there BMS training for interventionists? (4) What kinds of holistic outcomes did interventions that applied the BMS model include? And (5) What were their effectiveness and qualities of studies?

It is immensely challenging to review any intervention which claims to adopt the BMS model without addressing the core concepts in the model, and our systematic review is the first to follow the BMS definition and focus on three core concepts of the model. Our systematic review would help researchers further understand the meaning of BMS and what should be included in BMS dimensions respectively. It would also help establish a guideline for included activities and the BMS training, strengthen interventionists’ competency, and promote high-quality RCTs in the BMS research arena.

Methods

This systematic review was conducted in accordance with the procedures outlined in Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which offers a comprehensive guideline for reporting systematic review and meta-analyses.¹⁸

Search Strategy

On August 15, 2020, searches were performed in ProQuest, Web of Science, PsycINFO, PubMed, Cochrane, Wanfang, CNKI, AIRITI, and CADAL. Studies identified in those nine electronic databases were published in English and Chinese from the start date of each database to August 15, 2020. The search terms were: 1) English: a) “body mind spirit” or “body mind soul” or mind body spirit” or “mind body soul” or “integrative body mind spirit” or BMS or I-BMS; b) RCT or experiment* or “randomized control trial”; Chinese: a) 身心灵或综合身心灵全人健康 or 身心灵健康平衡 or 身心灵全人健康; b) 随机对照 or 实验 or 试验. The search term BMS and its equivalents were searched anywhere in the text; RCT and its equivalents were searched in title and abstract. The search strategies were: 1) English: ‘body mind spirit’ OR ‘body mind soul’ OR ‘mind body spirit’ OR ‘mind

body soul' OR 'BMS' OR 'integrative body mind spirit' OR 'I-BMS') AND (RCT OR 'randomized control trial' OR 'experiment*'); 2) Chinese: (身心灵 OR 综合身心灵全人健康 OR 身心灵健康平衡 OR 身心灵全人健康) AND(随机对照 OR实验OR试验).

Inclusion and Exclusion Criteria

Selected studies must be eligible for the following inclusion criteria: (a) must be randomized controlled trials (RCTs) or experimental studies; (b) must contain Body-Mind-Spirit (BMS) or equivalents in full-text; (c) the interventions must be holistic, with activities aiming to enhance all three perspectives of BMS, including body-, mind-, and spirituality-related ones; (d) the reported outcomes must include all three perspectives of well-being, including body-, mind-, and spirituality-related ones.

Exclusion criteria were: study protocols, other abbreviated BMS concepts rather than Body-Mind-Spirit, only mentioned BMS in reference list but not full-text, only mentioned BMS as other literature' findings but did not relate with own studies, only mentioned BMS once without any further relations with context, secondary data analysis study.

Data Extraction and Synthesis

The following data was extracted from each study: (1) study characteristics, including location, study design, population demographics, sample size; (2) the BMS definition; (3) intervention characteristics, including intervention name, setting, format, embraced activities, duration of intervention, number of sessions and length of each session; (4) interventionist's background, including the discipline and the BMS training experience; (5) study outcomes, including data collection frequency, outcome measures, and results about effectiveness. We categorized social relationships into the spirituality dimension.

Study Quality

The "risk of bias" tool from the Cochrane Handbook for Systematic Reviews of Interventions¹⁹ was applied to evaluate the quality of the included studies through six dimensions: random sequence generation, allocation concealment, blinding of participants and interventionists, blinding of outcome assessment, risks of incomplete outcome data, and selective reporting. All the studies were coded as having high, low or unclear risk of bias on each of the six facets. A study was considered as high quality if it demonstrated low risk on four or more aspects, medium quality if it showed low risk on two or three aspects, and low quality if it only displayed low risk on one aspect. This evaluation process was conducted by two independent reviewers TL and XH, and disagreements were settled through meetings and discussions with senior researcher IC.

Results

Search Results

Figure 1 showed the PRISMA flowchart of the study selection process. A total of 10,185 studies were found from electronic searches, with 8719 articles in English and 1466 articles in Chinese (Figure 1). The literature search through gray literature from reference lists was also conducted and additional 114 articles were found, which expanded the total number to 10,299. Among those, 4287 articles were duplicated and removed,

which left 6012 articles for screening title and abstract. Titles and abstracts of the identified papers were screened for eligibility by two reviewers, TL and XY, and 5799 articles were excluded according to inclusion and exclusion criteria. The full texts of the 213 identified papers were independently screened for eligibility by four screeners, TL, XY, IC, and YS. As a result of the screening process, a total of 20 studies were found appropriate to be included in the collection.

A total number of 2662 participants was included in the 20 studies. Table 1 presented the study characteristics and the BMS definition. Table 2A included intervention characteristics, and Table 2B contained interventionist background and the BMS training for interventionists. Table 3 demonstrated study outcomes and effectiveness, which were categorized as body-related, mind-related, spirituality-related, and holistic ones based on the authors' descriptions and the definition in the introduction section. Table 4 presented the characteristics related to quality indicators. Citations for the individual articles were only provided in the text for the findings related to the review questions.

Study Characteristics

Among 20 included studies, nine were conducted in mainland China and were written in Chinese with English title and abstract. The rest studies were all written in English, among which six studies were conducted in Hong Kong, one in South Korea, two in India, and one in the United States; one study did not clarify the study site.

The population of the studies can be divided into four categories. The participants of 16 studies were patients with diagnosed health issues, such as in vitro fertilization (IVF), cancer, depression, atopic dermatitis, multidrug-resistant tuberculosis, and Alzheimer's disease. Two studies aimed at caregivers, two directed on college students, and one focused on healthy older adults.

The sample size of the studies ranges from 20 to 330, while the dropout rate ranges from 8.75% to 59.87%. Overall, there were more female participants than male participants. The mean age of the participants ranges from 8.49 to 61.4 years old. Nine studies focused on middle-aged adults, and five focused on older adults aged 55 or above.

Among all control groups, five were waitlist controlled groups, ten received usual care, two were compared to cognitive behavioral therapy (CBT) intervention, one was compared to psycho-educational support, and two studies did not specify. Ten studies collected data twice; five studies collected three times; the rest five collected four times or more.

BMS Definition

This section addressed the first research question. The BMS definition was analyzed according to the following perspectives: did studies (1) present BMS as a whole concept? (2) mention "holistic" in BMS definition? (3) mention

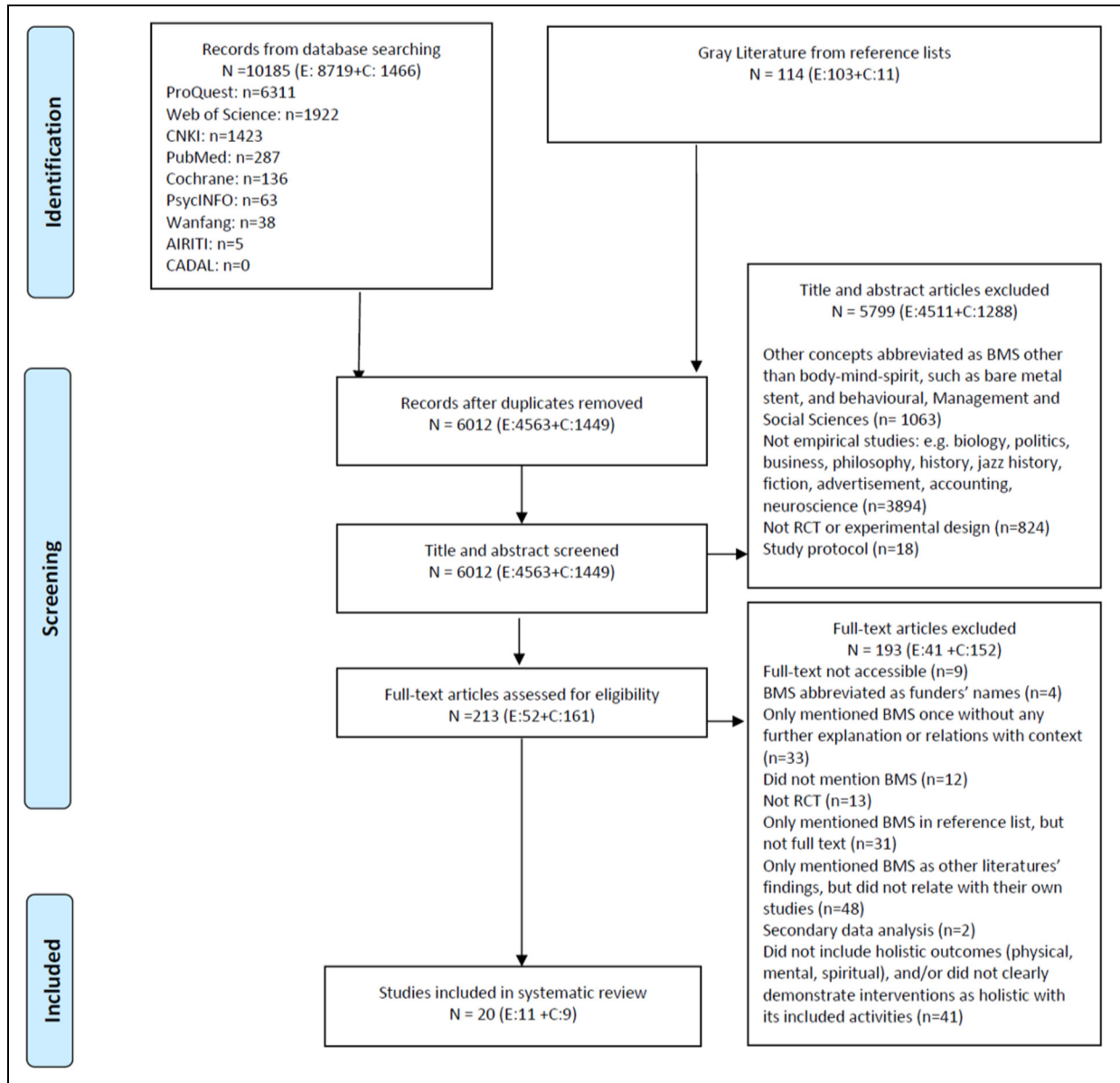


Figure 1. Flowchart of the study selection process.

“interrelation” among BMS? (4) relate the BMS concept to a certain culture?

Only two studies did not present BMS definition as a whole concept: Targ and Levine²⁰ did not define BMS at all; while Lee et al²¹ did not define BMS as a whole, they defined body, mind, and spirit categories separately. Among those which contained whole BMS concepts, most studies referred their BMS definitions to Chan et al⁹ or Lee et al,¹⁰ but Zhou²² did not specify the source of their BMS definition.

Thirteen studies^{3,22–33} mentioned “holistic” in their BMS definition, and Zhang et al (2016) illustrated that “man is an organic whole [...]” in their BMS definition. Many^{3,22,25,27,29,31,32,34} pointed out that physical, psychological, and spiritual well-being, or body, mind, and spirit, are “interconnected”, “interdependent”, or “interacted”. Although Fung et al²⁴ mentioned

“interconnectedness”, it referred to the interconnectedness of body, mind, and emotional expression, without including spiritual perspective. Xiu et al³⁵ depicted the “dynamic equilibrium” between body, mind, and spirit in their BMS definition. Seven studies^{3,22,25,27,29,31,32} included all three key concepts of the BMS model.

Less than half studies^{3,21,23,24,29,32–34} exhibited the categorized description of body, mind, and spirit separately. Lau et al²⁵ only demonstrated body and spirit, but not mind. In terms of social or interpersonal relationship, Chan et al³ and Chan et al²³ included it in the mind category, while Lee et al²¹ put it in the spirit category. Xue and Xue³³ listed social well-being as a separate category from the spiritual one.

While eight studies did not mention cultural factors in BMS definitions, more than half studies^{22,28–37} mentioned that the

Table 1. Study Characteristics and BMS Definition.

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Chan et al (2012)	Hong Kong	RCT with waitlist control	Women undergoing IVF treatment	339(88) 0.2596	Age: CG = 34.32 (3.09), IG = 34.51 (3.42) Gender: all female Ethnicity: all Chinese	IBMS model aims to enhance mind-body balance and spiritual well-being by fostering resilience and spiritual transformation. The IBMS intervention emphasizes a holistic health concept. Physical: physical health; Psychological: emotional and interpersonal relationships; Spiritual: capacity to endure and to accept suffering or misfortune; ability to construct and reconstruct meaning, and to maintain peace of mind, spirit, and sense of direction in face of harsh external circumstances
C. H. Chan, et al (2006)	Hong Kong	RCT with waitlist control	In vitro fertilization (IVF) patient	227(43) 0.1894	Age: IG = 36.0 (3.28), CG = 35.0 (3.49) Gender: all female Ethnicity: all Chinese	EBMS model emphasizes a holistic concept of health, and physical, psychological, and spiritual well-beings are believed to be interconnected and all play a major role in the face of stressful life events. EBMS is a strength-focused approach enhancing holistic health and building up personal competence and resilience to reduce the effect of anxiety and other psychological distresses. Physical: bodily functions; Psychosocial: emotions and interpersonal relationships; Spiritual: meaning of life
Fung et al (2020)	Hong Kong	RCT with waitlist control	Parents care for children with eczema	113(22) 0.1947	Age: IG = 41.52, CG = 41.07 Gender: Female: Total:80, IG = 91.67% (44), CG = 83.72% (36) Ethnicity: all Chinese	IBMS aims to enhance the holistic well-being, and focus on the interconnectedness of body, mind, and the emotional expression. B: Energy sensation, Healthy life style, Traditional Chinese medicine; M: Emotion control and cognition, Human relationship, Pain and suffering; S: Life meaning and goal Appreciation and sense of peace Resilience building IBMS model facilitates well-being

(continued)

Table 1. (continued).

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Lau et al (2020)	Hong Kong	RCT with comparison group of CBT	Patients with lung cancer and family caregiver	157(94) 0.5987	CBT = 61.4 (10.3); Caregiver: I-BMS = 54.1 (12.2), CBT = 53.7 (12.3); Gender: Female patients: Total: 94, I-BMS = 67.1% (51), CBT = 53.1% (43); Female Caregivers: total = 82, I-BMS = 42.1% (32), CBT = 61.7% (50); Ethnicity: all Chinese	through appreciating the interdependence among one's body, mind and spirit, and building resources for personal growth. I-BMS [...] appreciate the interconnectedness of their bodies, emotions, and spirituality, thereby building holistic capacity for transformative changes. B: physical symptoms, insomnia, daily functioning S: sense of peace, meaning B: exercise, nutrition, leisure, and sexuality M: stress, emotions, thoughts, and will S: meaning, relations, forgiveness, and happiness
Lee et al (2012)	South Korea	RCT with no specified control group	Community-dwelling healthy older adults	70 (38) 0.5429	Age: unclear Gender: unclear Ethnicity: all Asian	
Liu et al (2008)	Unclear	RCT with usual care	Female patients with breast cancer	49(21) 0.4286	Age: IG = 52(8.3), CG = 46.1(7.81); Gender: all female Ethnicity: all Chinese	BMS therapy integrates concepts and practices from Western medicine (eg positive psychology and forgiveness therapy), traditional Chinese medicine and the Eastern and Western philosophies of Buddhism, Taoism and Confucianism.
Lu et al (2014)	China	RCT with usual care	Patients diagnosed with multidrug-resistant tuberculosis	45 (NA)	Age: unclear Gender: unclear Ethnicity: all Chinese	Body mind spirit counseling mode [...] perceives human life as composed of body, mind and spirit. By maintaining a healthy body and broad mind, developing the sensibility deep in the soul, understanding the meaning of life, and making the three units balanced and harmonious, one can maintain healthy and balanced, and achieve holistic development.
Rentala et al (2015)	India	RCT with usual care	Patients diagnosed with depression	120 (20) 0.1667	Age: IG = 29.21 (7.60), CG = 31.03 (7.41) Gender: Female: Total = 69, IG = 60.7% (34), CG = 54.7% (35) Ethnicity: all Indian	BMS Model highlights the components of Buddhism, recognition and acceptance of negative emotions, self-love techniques and gaining through pain.
Rentala et al (2019)	India	RCT with waitlist control	Female students pursuing pre university or university course	230 (21) 0.0913	Age: IG = 17.65(0.65), CG = 17.97(0.57)	BMS model emphasizes a holistic concept of health by establishing a dynamic balance of interrelationships

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Table 1. (continued).

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Sang (2011)	China	RCT with no specified control group	College students with symptoms of social anxiety	20 (NA)	Gender: all female; Ethnicity: all Indian Age: IG = 20.90, CG = 21.50 Gender: Female: Total: 12, IG = 60% (6), CG = 60% (6) Ethnicity: all Chinese	among mind, body, and spirit. It takes into account individuals' physical, psychological, social, and spiritual needs on the one hand and incorporates traditional cultural values and philosophical concepts on the other. "Body mind spirit counseling mode" [...] comprehensively regulates the physical and mental imbalances of individuals by adjusting the human body, mentality and spirituality. Body mind spirit counseling mode [...] combines the form of western psychological counseling and the content of traditional Chinese culture, and has distinctive localization characteristics. This mode integrates traditional medicine, health preservation and philosophy. It originated from traditional Chinese culture, and incorporated the concept of holistic health and holism.
Sun & Cui (2013)	China	RCT with usual care	Patients diagnosed with advanced lung cancer	60 (NA)	Age: Total = 55.36(8.4) Gender: Female: Total: 22(36.67%); Ethnicity: all Chinese	"Body mind spirit counseling mode" model [...] makes use of health and fitness methods and life philosophy in traditional Chinese culture, and intervenes from the three levels of body, emotions and thoughts. Through the interaction of mind, body and spirit, it motivates group members to achieve holistic health. It originated from the life concept of "the unity of body and spirit" in TCM theory, in which: physical body, mentality and emotions, and the spirit and state of mind, such as the meaning of life, the value of life, and people's outlook on life and death, suffering, optimism.
Tang et al (2017)	China	RCT with usual care	Patients diagnosed with cancer	120 (NA)	Age: Total = 58.21(6.34) Gender: Female: Total: 47(39.17%) Ethnicity: all Chinese	Not Available
Targ & Levine (2002)	USA	RCT with standard psycho-educational support group	Women within 18 months of initial diagnosis of primary breast cancer, or who had	181(57) 0.3149	Age: IG = 49(8.6), CG = 47(8.8) Gender: all female Ethnicity: Asian IG: 8(11%), CG:	Not Available

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Table 1. (continued).

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Xie et al (2020)	Hong Kong	RCT with waitlist control	been diagnosed with metastatic breast cancer Children of primary-school age diagnosed with Atopic Dermatitis (AD)	113 (28) 0.2478	2(4%); Hispanic IG: 1(1%), CG: 1(2%); African-American IG: 4(5%) CG: 4(8%); Caucasian IG: 62(83%), CG: 41(85%) Age: IG = 8.49(1.82), CG = 8.66(2.07) Gender: Female: Total: 53, IG = 43.1% (25), CG = 50.9% (28) Ethnicity: all Chinese	IBMS model emphasizes not only treating clients as a whole person with strengths, but also the balance between physical health, emotion, spirituality, and the wider environment. It is based on a holistic perspective and Eastern philosophies on health and well-being such as Traditional Chinese Medicine, Daoism, Confucianism and Buddhism. Body-mind-spirit counseling model [...] combines the form of western psychological counseling and the content of traditional Chinese culture, and has distinctive localization characteristics. This model refers to and reflects the "holistic thoughts" and "body-mind interaction theory" of Chinese culture in terms of humanity and health. "Body-mind-spirit" as a whole has two layers of meanings: First, this model mainly promotes interventions from the three aspects of "body, mind, spirit". Second, the three aspects interact with and depend on each other, which means this model will achieve the goal of holistic health by promoting the benign development of the recipients' "body, mind, and spirit". It originated from the life concept of "the unity of body and spirit" in TCM theory, in which: physical body, mentality and emotions, and the spirit and state of mind, such as the meaning of life, the value of life, and people's outlook on life and death, suffering and optimism.
Xiong & Mao (2017)	China	RCT with usual care	Patients diagnosed with cancer	120 (NA)	Age: Total = 58.21(6.34) Gender: Female: Total: 47(39.17%) Ethnicity: all Chinese	Body mind spirit counseling mode [...]
	China	RCT with usual care		168 (NA)	Age: IG = 37(14), CG = 40(14)	Body mind spirit counseling mode [...]

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Table 1. (continued).

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Xiong et al (2009)			Patients diagnosed with depression		Gender: Female: Total: 126, IG = 77.38% (65), CG = 72.62% (61) Ethnicity: all Chinese	combines the form of western psychological counseling and traditional Chinese culture, and has distinctive localization characteristics. It applies traditional Chinese health and fitness methods and life philosophy to a group setting. Focusing on the three levels of body, emotions and thoughts, this model promotes body-mind-spirit interaction to help group members achieve holistic health.
Xiu et al (2020)	Hong Kong	RCT with comparison group of CBT	Informal caregivers of lung cancer patients	157 (94) 0.5987	Age: Total:53.9(12.18), CBT: 53.7(12.29), IBMS: 54.1(12.15) Gender: Female: Total: 82(52.2%), CBT: 50(61.7%), IBMS: 32(42.1%) Ethnicity: all Chinese	I-BMS aims to foster the well-being by restoring dynamic equilibrium between body, mind, and spirit. It was developed based on integrating insights from Daoism, traditional Chinese medicine (TCM), and Western psychotherapy models.
Xue & Xue (2018)	China	RCT with usual care	Patients diagnosed with Alzheimer's disease	80 (7) 0.0875	Age: unclear Gender: Female: Total: 56.2%(45) Ethnicity: all Chinese	Body mind spirit counseling mode emphasizes the systematic and integral concept of holistic health. It integrates traditional health preservation, TCM philosophy, Tai Chi, yoga, mindfulness and other methods, allowing group members to use various activities to adjust body, emotions and spirituality. Holistic care takes people's physical, mental, spiritual and social perspectives into consideration. The study presents the concepts of holistic care and BMS interchangeable.
Zhang et al (2016)	China	RCT with usual care	Patients diagnosed with multidrug-resistant tuberculosis	68 (NA)	Age: Total = 45.46(4.27) Gender: Female: Total: 28(41.18%) Ethnicity: all Chinese	Physiological: Physiological and safety needs; Mental: Esteem and self-actualisation needs; Spiritual: Spiritual needs; (Social: Belongingness & love needs) Body mind spirit counseling mode [...] combines the form of western psychological counseling and traditional Chinese culture. Man is an organic whole composed of physical,

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Table 1. (continued).

Author (year)	Country/ Region	Study Design	Population	Sample Size (dropout #) %	Participant demographics (age, gender, ethnicity)	BMS Definition
Zhou (2010)	China	RCT with usual care	Patients diagnosed with breast cancer	120 (NA)	Age: unclear Gender: all female; Ethnicity: all Chinese	psychological, and ideological aspects. The three aspects interact with and depend on each other. Changes in any of these aspects can cause the other two to develop in the direction of good or bad. Body: human body as physical aspect; Mind: emotions as psychological aspect; Spirit: spirituality and the state of thought. Body mind spirit counseling model [...] applies traditional Chinese health and fitness methods and life philosophy to a group setting. Focusing on the three levels of body, emotions and thoughts, this model promotes body-mind-spirit interaction to help group members achieve holistic health.

Table 2. A. Intervention Characteristics.

Author (year)	Intervention name	Included Activities	Intervention setting	Intervention Duration# of session	Format Group/ Individual In-person/ Virtual
Chan et al (2012)	IBMS	Holistic well-being, stress-reduction training, stretching, acupressure, massage, meditation, breathing, singing, journal writing, and drawing, ancient Chinese philosophical writings on suffering and the meaning of life	Unclear	4 weeks 4 sessions 3 hours	Group In-person
C. H. Chan, et al (2006)	Eastern BMS	Traditional Chinese Medicine (TCM), tai chi, meditation, breathing, singing, journal writing, drawing, ancient Chinese philosophical writings on suffering and the meaning of life	Institution (hospital)	4 weeks 4 sessions 3 hours	Group In-person
Fung et al (2020)	A psychosocial intervention program based on the IBMS protocol	Body: body-mind exercise (one-second-technique), acupressure points, massage, abdominal breathing Mind: sharing on caregiving challenges and parenting difficulties, useful tips (DOs and DON'Ts), mutual support activities Spirit: reflection on self-portrait and mindful awareness, life trajectory review and strength identification, selective attention exercise and parents' wellbeing, gratification and appreciation diary, lucky draw and let-go, sharing on learning from the child and caregiving journey	Unclear	6 weeks 6 sessions 3 hours	Group In-person
Lau et al (2020)	IBMS	Holistic health, mind-body exercises (such as acupressure and Qigong inspired movements), mindfulness-based relaxation (meditation), life-review	Unclear	8 weeks 8 sessions 3 hours	Group In-person
Lee et al (2012)	BMS	Body: group discussion, more activities, weekly exercise plan, yoga practice, eating habits, healthy diet plan, mindful eating, unhealthy inhibited sexuality, methods of self care Mind: strategies to relieve stress, yoga, meditation, pros and cons of aging, anger management, stress reduction techniques, transform negative automatic thinking into positive thinking, writing the appreciation journal Spirit: reflection on goals, drawing an eco-map, practice altruism, decision tree for forgiveness, reconciliation, happiness statement	Community (community welfare centers)	12 weeks 12 sessions unclear	Group In-person
Liu et al (2008)	BMS	Qi-gong exercises, sharing assignments, singing Enhancing physical strength: Self-care planning, health diet, qi-gong exercises, massage of acupuncture points, imagery Increasing emotional release: Drawing impressions of emotions and self, sharing strategies of releasing emotions	Institution (cancer foundation center)	10 weeks 10 sessions 3 hours	Group In-person

(continued)

12 **Table 2.** (continued).

Author (year)	Intervention name	Included Activities	Intervention setting	Intervention Duration # of session	Duration of each session	Format Group/ Individual In-person/ Virtual
Lu et al (2014)	BMS	Establishing positive self-concept: Sharing how to love oneself, creating love cards, sharing one's own strength and inner powers Building social network: Creating love cards, sharing how to devote ourselves to others (such as being volunteers) Developing positive meanings of life: Sharing the meanings of life and self-existence, creating rainbows of forgiveness	Institution (hospital)	4 weeks	4 sessions 3 hours	Group, individual In-person
Rentala et al (2015)	BMS	Health management, diet, acupressure massage, breathing, meditation, discussion, sharing, mutual assistance, recitation, reflection Emotional management, stress reduction training, acupressure exercises, breathing techniques, meditation, writing, drawing, discovery of positive meaning, venting negative emotions, instructions to health, analyse the body–mind–spirit relationship, face depressive disorder positively, ten techniques of longevity exercises, group back massage, abdominal breathing exercises, assess and reveal the participants' strengths, manage negative emotions, hand massage acupressure exercises, therapeutic writing, group sessions, practicing forgiveness techniques, self-love techniques and meditation, discussion, verbalized about future goals, developed a healthy life plan and summarized the improvement in their condition and the resultant transformation	Institution (hospital)	4 weeks	4 sessions 3 hours	Group, individual In-person
Rentala et al (2019)	Holistic stress management program	Illustration of holistic group health promotion program and learning goals, abdominal breathing exercises, assessing strengths of the participants, encouraging to share their expectations of the program, concept of eustress and distress; signs and symptoms of stress, maintaining stress diary, singing activity, hand swinging exercises, stress test, breathing exercise, ten techniques of longevity exercises, answering the stress questionnaire, discussion, clay therapy, effects of stress on academic performance, concept of no pain no gain, meditation, acupressure exercises, craftwork, stress sorting exercise, therapeutic writing, drawing, group-sharing activities, progressive muscle relaxation, storytelling, daily timetables, mindful eating Games, discussions, behavioral training, role playing, text	Institution (colleges)	4 weeks	8 sessions 1.5-2 hours	Group In-person
Sang (2011)	BMS		Unclear		unclear	

(continued)

Table 2. (continued).

Author (year)	Intervention name	Included Activities	Intervention setting	Intervention Duration # of session	Format Group/ Individual In-person/ Virtual
Sun & Cui (2013)	BMS	assignments, behavior assignment. (detailed activities: not available) Abdominal breathing, free hand exercise, meditation, relaxation technique, self-love techniques, forgiveness exercise	Institution (hospital)	10 sessions unclear 5 weeks 5 sessions 2 hours	Group In-person Group In-person
Tang et al (2017)	BMS	lecture about body-mind-spirit and holistic health, interactive relationship among body, emotion and life value, breathing, drawing, meditation, muscle relaxation, massage, singing	Institution (hospital)	6 weeks 6 sessions 3-4 hours	Group In-person
Targ & Levine (2002)	CAM (in title: mind-body-spirit group)	Health Series discussion group, yoga classes, dance therapy sessions, silent meditation, guided imagery including writing and drawing exercises, a discussion group	Unclear	12 weeks 24 sessions 2.5 hours	Group, individual In-person
Xie et al (2020)	IBMS	Traditional Chinese philosophy, learn to “go with the flow”, mindful jar making, problem-solving games, gift presentation, and appreciation dialogue	Community (social service centers)	6 weeks 6 sessions 3 hours	Group In-person
Xiong & Mao (2017)	BMS	Introducing the concept of “body-mind-spirit and holistic health”, and the interactive relationship between body, emotion and life value, breathing, explaining the source of emotions and discussing gains and losses, drawing, explaining “anger” and “love”, muscle relaxation exercises, meditation, joint meridian exercise, review emotion expression methods in family, singing, developing future rehabilitation plan	Institution (hospital)	6 weeks 6 sessions 3-4 hours	Group, individual In-person
Xiong et al (2009)	BMS	Introducing the concept of “body-mind-spirit and holistic health”, the distribution of depression in society, discussion, breathing exercises, explaining the source of emotions, discussing the perspectives of gains and losses, singing, reading mottoes, drawing, meditation, explaining “anger” and “love”, review emotion expression methods in family, breathing, muscle relaxation exercises	Community (park)	4 weeks 12 sessions 2 hours	Group, individual In-person
Xiu et al (2020)	IBMS	Psycho-education about holistic well-being, mind-body exercises (eg, acupressure and Qigong), mindfulness-based relaxation techniques, life review exercises for reconstructing meanings out of their caregiving journey	Unclear	8 weeks 8 sessions 3 hours	Group In-person
Xue & Xue (2018)	Holistic care	Healthcare, caregiving, and activities of daily living (ADL) needs: observation and monitor of life characteristics, diet, excretion process, skin care, ADL care, utilization of supplements Rehabilitation needs: physical therapy activities,	Unclear	4 weeks unclear unclear	Group, individual In-person

(continued)

Table 2. (continued).

Author (year)	Intervention name	Included Activities	Intervention setting	Intervention Duration # of session	Format Group/ Individual In-person/ Virtual
Zhang et al (2016)	BMS	<p>occupational therapy activities, capacity training</p> <p>Mental, social and spiritual needs: life orientation training, social networking activities, hobby activities, volunteer services, individual interview, contact with family members</p> <p>Physical rehabilitation: tuberculosis knowledge lectures, anti-tuberculosis diet lectures, therapeutic medication lectures, and breathing exercises</p> <p>Psychological rehabilitation: targeted psychological guidance, role playing, music appreciation, self-relaxation training, anti-tuberculosis treatment experience sharing</p> <p>Social rehabilitation: reshape family responsibilities and rebuild supportive interpersonal relationships, give full play to the role of the social support system, restore social roles and functions</p> <p>Post-discharge intervention: check on breathing exercises, wuqinxi exercises, rehabilitation, anti-tuberculosis knowledge and breathing exercises</p> <p>Lecture about body-mind-spirit and holistic health, forgiveness, letting go and love; breathing practice, singing, recitation, drawing, meditation, muscle relaxation, massage</p>	Institution (hospital)	4 weeks 8 sessions 1 hour	Group, individual In-person, virtual
Zhou (2010)	BMS	<p>Lecture about body-mind-spirit and holistic health, forgiveness, letting go and love; breathing practice, singing, recitation, drawing, meditation, muscle relaxation, massage</p>	Institution (hospital)	4 weeks 4 sessions 4 hours	Group In-person

Table 2. 2B Interventionist Background and BMS Training.

Author (year)	Interventionist	BMS Training for interventionists
Chan et al (2012)	The first and second author	Unclear
C. H. Chan, et al (2006)	EBMS practitioner: first author Chan	The first author is one of the experienced practitioners of the EBMS group intervention at the Centre on Behavioral Health, the University of Hong Kong.
Fung et al (2020)	Experienced social workers and counselors	Training on IBMS intervention model: 3 full-day sessions with didactic teaching on the theoretical underpinnings of IBMS, and practice training and experiential learning of the IBMS-informed techniques.
Lau et al (2020)	Individuals with degrees in either social work or psychology	For all group facilitators: attended 3-day training (24-27 h), observed and/or helped in the demonstration groups, followed a detailed session plan and used the assigned materials for their respective intervention.
Lee et al (2012)	Gerontological social workers	Capacity building using a train-the-trainer technique
Liu et al (2008)	Qi-gong master, mental health nurses: the primary investigator (the correspondence author) and co-investigators (the first author)	Unclear
Lu et al (2014)	A chief physician, a psychological counselor and a nurse trained in group counseling	Unclear
Rentala et al (2015)	Certified practitioner: first author	BMS practitioner training at Centre on Behavioral Health, the University of Hong Kong, Hong Kong w/o details
Rentala et al (2019)	Psychiatric nurse: first author	The first author: BMS practitioner training at center on behavioral health, University of Hong Kong, Hong Kong. w/o details
Sang (2011)	Unclear	Unclear
Sun & Cui (2013)	Nationally certified third-level psychological counselor, mental health instructors trained and certified by the hospital	Unclear
Tang et al (2017)	National certified second-level psychological counselors, senior deputy director of the psychology department of the hospital, nurses of the hospital who have received specialized tumor rehabilitation knowledge and technical training and obtained a qualification certificate	Unclear
Targ & Levine (2002)	Licensed clinical social worker with several years experience; a different co-leader for each cohort	Unclear
Xie et al (2020)	Social workers	Social worker: IBMS training offered by research team w/o details
Xiong & Mao (2017)	Associate chief physician of psychological department, intermediate-level psychotherapist, nationally certified second-level psychological counselors, nurses who have received specialized tumor rehabilitation knowledge and technical training and obtained a qualification certificate	Unclear
Xiong et al (2009)	Unclear	Unclear
Xiu et al (2020)	Trained facilitators with backgrounds in social work or health psychology	Yes w/o details
Xue & Xue (2018)	1 associate director of geriatrics Department, 1 head nurse, 2 physiotherapists, 2 nutritionists, 5 nurses, 1 social worker student intern and 10 nursing staff.	Holistic care training: 10-hour training taught by the research team, with lectures on the concept and basic knowledge of holistic care, different caring tasks undertaken by different personnel, and the dedication and teamwork spirit required by holistic care. 5 sessions with the themes of recognizing Alzheimer's disease, "people-oriented" holistic care, elderly care environment design and social support, how to effectively prevent and deal with the behavioral problems of the elderly with Alzheimer's disease, diversified activities (individuals and groups).

5 physician/nurse: one with senior professional title; 3 with

(continued)

Table 2. (continued).

Author (year)	Interventionist	BMS Training for interventionists
Zhang et al (2016)	intermediate professional titles, including 1 doctor who obtained the qualification of psychological counselor and 2 supervisor nurses; 1 with junior professional title.	The physician with senior professional title trains the group members.
Zhou (2010)	Unclear	Unclear

BMS concept was extracted from Eastern philosophies or cultures, such as Buddhism, Taoism, and Confucianism. Among those, Liu et al³⁶ also mentioned that BMS integrated the concept from Western philosophies without specific examples. Rentala et al²⁷ depicted that BMS incorporates traditional cultural and philosophical values but did not provide specific categories.

Intervention Characteristics

Most studies included BMS in their intervention names. Ten studies were conducted in institutions including hospitals and colleges, three in community settings, and seven did not mention settings. All studies employed group and in-person formats in their interventions. Less than half adopted both group and individual formats, and Zhang et al³⁴ used virtual format besides group and in-person ones. The duration of the studies ranged from 4 weeks to 12 weeks. The number of the sessions ranged from 4 to 24, and the duration of the sessions ranged from 1 to 4 hours.

Intervention Activities

This section addressed the second research question. All studies mentioned activities adopted in their interventions, but related activities to BMS concepts differently: only 25 percent of studies placed the activities into body, mind, and spirit categories; around half studies explained some activities in detail but did not categorize them, and the rest only mentioned the names of the activities.

Only 25 percent of studies specified the body, mind, and spirit categories for activities.^{21,24,33,34,36} The most frequently adopted physical activities were self-care methods,^{21,36} diet,^{21,33,36} massage,^{24,36} and breathing exercises.^{24,34} Experience sharing was the most commonly applied activity within the mind category.^{24,34} The mind category also included activities like yoga, meditation, anger management, stress reduction techniques, transformation of thoughts, appreciation journal,²¹ drawing impressions of emotions and self, sharing strategies of releasing emotions,³⁶ targeted psychological guidance, music appreciation, and self-relaxation training.³⁴ Meanwhile, the most popular spiritual activities were altruism practices,^{21,36} forgiveness exercises,^{21,36} family relationship reshaping,^{33,34} and social networking activities.^{33,34}

In terms of activity goals and details, eleven articles stated the goals for some of the activities but did not specifically set

up categories.^{22,23,25,27–32,35,37} Among them, eight studies described the sessions in detail as to their themes, objectives, and core contents; one study stated the session objectives and the activities separately, but did not make adequate connections between them; two studies only specified activities and their respective goals without mentioning the session structure or themes. Among the eight studies that mentioned session themes, all of them held a session with the theme of growth through pain and personal transformation; six studies held a session with the theme of self-love and letting go; another six studies carried out a session on emotional management. Four studies^{3,20,26,38} listed the activities in their programs, but none stated the goals of the activities or put them into categories.

Interventionist Background

This section addressed the third research question. The interventionists' professional and educational backgrounds included social workers, counselors, nurses, physicians, physiotherapists, nutritionists, personal care aides in the hospital, qi-gong master, and individuals with degrees in either social work or psychology.

Regarding interventionist background, interventions were conducted by social workers;^{20,21,24,30,33} counselors,^{24,26,28,29,32} including psychological counselors,^{26,28,29} mental health instructors,²⁸ and psychotherapists;³² physicians;^{26,29,32,34} and nurses.^{26,29,32–34} In addition, Xue and Xue³³ invited physiotherapists, nutritionists, and personal care aides working in the hospital to be interventionists. Besides, a qi-gong master led the intervention designed by Lu et al²⁶ Two interventions were facilitated by individuals with degrees in either social work or psychology.^{25,35} The authors of studies also led interventions,^{3,23,27,36,37} but their disciplines were not stated in the article. Moreover, three studies^{22,31,38} did not specify the background of the interventionists.

BMS Training for Interventionists

This section also addressed the third research question. Only three studies^{24,25,33} explained the training for interventionists in detail. The training lasted ten hours³³ to three days.^{24,25} Interventionists were taught about the theory of BMS, the techniques of the intervention,^{24,25,33} and the dedication and team spirit required by the intervention.³³ Many studies^{3,21,27,30,34,35,37} mentioned that interventionists attended training but did not specify its content.

Table 3. Data Collection Information, Measurement, Effectiveness for Studies Considering Group by Time Interaction and Were Effective in Holistic Outcomes.

Author (year)	Data collection info	Measurement: Tools for Holistic Outcomes	Effectiveness
Chan et al (2012)	3 times: pre (during recruitment), post (first day of ovarian stimulation), follow-up (day of embryo transfer)	<p><u>Physical:</u> BMSWBI Physical Distress subscale, BMSWBI Daily Functioning subscale, Clinical profile data (no. of embryos replaced, pregnancy rate, implantation rate, multiple pregnancy rate, pregnancy outcome)</p> <p><u>Mental:</u> C-STAI (trait anxiety, state anxiety), BMSWBI Positive Affect subscale, BMSWBI Negative Affect subscale</p> <p><u>Spiritual:</u> Importance of Childbearing Index, C-KMS (marital satisfaction), BMSWBI Tranquility subscale, BMSWBI Disorientation subscale, BMSWBI Resilience subscale</p>	<p><u>Physical:</u> BMSWBI Physical Distress subscale: (T1->T2): F = 6.55, p < .01, $\eta^2 = .03$; (T0->T2): F = 12.95, p < .01, $\eta^2 = .05$ BMSWBI Daily Functioning subscale: (T0->T2): F = 6.01, p < .05, $\eta^2 = .02$ <u>Mental:</u> C-STAI (trait anxiety): (T0->T1): F = 4.09, p < .05, $\eta^2 = .02$; (T0->T2): F = 4.90, p < .05, $\eta^2 = .02$ C-STAI (state anxiety): (T0->T1): F = 21.52, p < .01, $\eta^2 = .08$; (T0->T2): F = 12.82, p < .01, $\eta^2 = .05$ BMSWBI Negative Affect subscale: (T1->T2): F = 3.79, p < .05, $\eta^2 = .02$; (T0->T2): F = 6.47, p < .01, $\eta^2 = .03$ <u>Spiritual:</u> Importance of Childbearing Index: (T0->T1): F = 10.83, p < .01, $\eta^2 = .04$; (T0->T2): F = 20.53, p < .01, $\eta^2 = .08$ C-KMS (marital satisfaction): (T1->T2): F = 4.42, p < .05, $\eta^2 = .02$; (T0->T2): F = 4.94, p < .05, $\eta^2 = .02$ BMSWBI Tranquility subscale: (T0->T1): F = 11.73, p < .01, $\eta^2 = .05$; (T1->T2): F = 4.56, p < .05, $\eta^2 = .02$; (T0->T2): F = 24.86, p < .01, $\eta^2 = .09$ BMSWBI Disorientation subscale: (T0->T1): F = 7.99, p < .05, $\eta^2 = .03$; (T0->T2): F = 7.18, p < .01, $\eta^2 = .03$ BMSWBI Resilience subscale: (T0->T2): F = 5.33, p < .05, $\eta^2 = .02$</p>
Fung et al (2020)	3 times: pre, post, follow-up (6-week post intervention)	<p><u>Physical:</u> HWS General Vitality subscale</p> <p><u>Mental:</u> PSS (stress), PHQ-9 (depression), GAD-7 (anxiety), HWS Affictive Emotion subscale</p> <p><u>Spiritual:</u> HWS Affictive Sensation subscale, HWS Affictive Ideation subscale, HWS Nonattachment subscale, HWS Mindful Awareness subscale, HWS Spiritual Self-care subscale, DFI (family function)</p>	<p><u>Physical:</u> HWS General Vitality subscale: (T0->T2): F(2, 178) = 3.39, p = .036, $\eta^2 = .037$ <u>Mental:</u> PSS (stress): (T0->T2): F(2, 178) = 4.13, p = .018, $\eta^2 = .044$ PHQ-9 (depression): (T0->T2): F(2, 178) = 8.59, p < .001, $\eta^2 = .088$ <u>Spiritual:</u> HWS Affictive Ideation subscale: (T0->T2): F(2, 178) = 3.97, p = .021, $\eta^2 = .043$ HWS Nonattachment subscale: (T0->T2): F(2, 178) = 4.43, p = .013, $\eta^2 = .047$ General holistic: EORTC QLQ-30: (T0->T3): $\gamma = -.18$, p < .01</p>
Lau et al (2020)	4 times: pre, post (1-week post-intervention),	<p><u>General holistic:</u> FACT-G, EORTC QLQ-30</p> <p><u>Physical:</u> FACT-G Version 4, Physical subscale, FACT-G</p>	<p><u>General holistic:</u> EORTC QLQ-30: (T0->T3): $\gamma = -.18$, p < .01</p>

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Author (year)	Data collection info	Measurement: Tools for Holistic Outcomes	Effectiveness
Rentala et al (2015)	follow-ups (8-week & 16-week post-intervention)	Functional subscale, EORTC QLQ-30 Symptoms subscale, HWS Bodily Irritability subscale, HWS General Vitality subscale, ISI (insomnia) Mental: FACT-G Emotional subscale, HWS Emotional Vulnerability subscale, DAS (death anxiety), HADS Anxiety subscale, HADS Depression subscale, DFAS Achievement subscale, DFAS Self-control subscale, DFAS Dependency subscale Spiritual: HWS Spiritual Disorientation subscale, HWS Non-attachment subscale, HWS Mindful Awareness subscale, HWS Spiritual Self-care subscale FACT-G Social subscale General holistic: BMSWBI, WHOQOL-BREF	<u>Mental:</u> HADS Depression subscale: (T0->T3): $\gamma = .16$, $p < .05$ Spiritual: HWS Spiritual Self-care subscale: (T0->T3): $\gamma = -.20$, $p < .05$ <u>General holistic:</u> BMSWBI: (T0->T4): $F(4460) = 48.15$, $p < .001$, $\eta^2 = 0.295$ WHOQOL-BREF: (T0->T4): $F(4460) = 49.18$, $p < .001$, $\eta^2 = 0.300$ <u>General holistic:</u> BMSWBI: (T0->T6): $F(6,1200) = 156.40$, $p < .01$, $\eta^2 = 0.13$ <u>Physical:</u> SCORAD (severity of Atopic Dermatitis): (T0->T1): $F = 4.827$, $p < .05$, $\eta^2 = .042$ Mental: SCAS Generalized Anxiety subscale: (T0->T2): $F = 6.027$, $p < .05$, $\eta^2 = 0.051$ ERC Labilty/Neativity subscale: (T0->T1): $F = 4.370$, $p < .05$, $\eta^2 = 0.038$; (T0->T2): $F = 4.975$, $p < .05$, $\eta^2 = 0.043$ ERC Emotion Regulation subscale: (T0->T2): $F = 6.588$, $p < .05$, $\eta^2 = 0.056$ Spiritual: SCAS Social Phobia subscale: (T0->T2): $F = 5.692$, $p < .05$, $\eta^2 = 0.049$ <u>General holistic:</u> QOL-AD: (T0->T1): $t = 3.787$, $p = .000$ EDAS Total scale: (T0->T1): $t = 0.339$, $p = .003$ <u>Physical:</u> EDAS Activity subscale: (T0->T1): $t = 4.343$, $p = .000$ EDAS Self-Care subscale: (T0->T1): $t = 2.859$, $p = .006$ <u>Mental:</u> EDAS Mental Function subscale: (T0->T1): $t = 0.536$, $p = .006$
Rentala et al (2019)	5 times: pre, post (1-month post intervention), follow-ups (2-month, 3-month & 6 month post intervention)	General holistic: BMSWBI	
Xie et al (2020)	7 times: pre, post (1-month post intervention), follow-ups (2-month, 3-month, 4-month, 5-month & 6-month follow up) 3 times: pre, post, follow-up (5-week post intervention)	<u>General holistic:</u> CDLQI (dermatology-specific quality of life) <u>Physical:</u> SCORAD (severity of Atopic Dermatitis) <u>Mental:</u> SCAS Generalized Anxiety subscale, ERC Labilty/Neativity subscale, ERC Emotion Regulation subscale, RSES (self-esteem) <u>Spiritual:</u> CPS (quality of parent-child relationships, quality of father-child relationship, quality of mother-child relationship), SCAS Social Phobia subscale	
Xue & Xue (2018)	2 times: pre, post	<u>General holistic:</u> QOL-AD, EDAS Total scale <u>Physical:</u> EDAS Activity subscale, EDAS Self-Care subscale, EDAS Organ Function subscale <u>Mental:</u> EDAS Mental Function subscale, EDAS Communication subscale <u>Spiritual:</u> EDAS Family Life subscale, FACIT-Sp Total scale, FACIT-Sp Peace subscale, FACIT-Sp Meaning subscale, FACIT-Sp Belief subscale	

(continued)

Table 3. (continued).

Author (year)	Data collection info	Measurement Tools for Holistic Outcomes	Effectiveness
			EDAS Communication subscale: (T0->T1): $t = 0.001$, $p = .000$
			Spiritual:
			EDAS Family Life subscale: (T0->T1): $t = 0.47$, $p = .002$
			FACIT-Sp Total scale: (T0->T1): $t = 4.303$, $p = .000$
			FACIT-Sp Peace subscale: (T0->T1): $t = 3.395$, $p = .001$
			FACIT-Sp Meaning subscale: (T0->T1): $t = 2.618$, $p = .011$
			FACIT-Sp Belief subscale: (T0->T1): $t = 3.518$, $p = .001$

Note.

T0: pre, T1: post, T2-T7: follow-ups.
 BMSWBI (Body-Mind-Spirit Well-Being Inventory); CDLQI (Children's Dermatology Life Quality Index); C-KMS (Chinese version of the Kansas Marital Satisfaction Scale); CFS (Closeness to Parents Scale); C-STAI (Chinese State-Trait Anxiety Inventory); DAS (Death Anxiety Scale); DFAS (Dysfunctional Attitudes Scale); DFI (Dermatitis Family Impact); EDAS (Elderly Disability Assessment Scale); EORTC QLQ-30 (European Organization for Research and Treatment of Cancer QLQ-30); ERC (Emotion Regulation Checklist); FACT-G (Functional Assessment of Cancer Therapy General); FACT-Sp (Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being); CAD-7 (Generalized Anxiety Disorder Scale 7); HWS (Holistic Well-Being Scale); ISI (Insomnia Severity Index); PHQ-9 (Patient Health Questionnaire 9); PSS (Perceived Stress Scale); QOL-AD (Quality of Life-Alzheimer's Disease); RSES (Rosenberg Self Esteem Scale); SCAS (Spence Children's Anxiety Scale); SCORAD (The Scoring Atopic Dermatitis Index); WHOQOL-BREF (World Health Organization Quality of Life-Brief Version).

Table 4. Risk of Bias with Quality Indices.

Author (year)	Random sequence generation	Allocation concealment	Blinding of participants and interventionists	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
Chan et al (2012)	+	?	-	?	+	+
C.H. Chan et al (2006)	+	?	?	?	+	+
Fung et al (2020)	+	-	-	?	+	+
Lau et al (2020)	+	+	+	?	-	+
Lee et al (2012)	?	?	?	?	+	-
Liu et al (2008)	+	+	+	-	+	+
Lu et al (2014)	+	?	?	?	+	+
Rentala et al (2015)	+	?	-	-	+	+
Rentala et al (2019)	+	-	-	?	+	+
Sang (2011)	?	?	?	?	+	+
Sun & Cui (2013)	+	?	?	?	?	+
Tang et al (2017)	+	?	?	?	?	-
Targ & Levine (2002)	?	?	?	?	+	+
Xie et al (2020)	+	?	+	-	+	+
Xiong & Mao (2017)	-	?	?	?	+	+
Xiong et al (2009)	+	?	?	?	+	+
Xiu et al (2020)	?	?	?	?	-	+
Xue & Xue (2018)	?	?	?	?	+	+
Zhang et al (2016)	-	?	?	?	?	+
Zhou (2010)	+	?	?	?	?	+

Note. +: low risk; -: high risk; ?: unclear.

The rest^{20,22,23,26,28,29,31,32,36,38} did not point out whether or not there was any training for interventionists.

Outcomes and Effectiveness

This section addressed the fourth and fifth research questions. Outcomes were categorized into four categories: body-, mind-, spirituality-related, and general holistic outcomes. Body-, mind-, and spirituality-related ones were specified according to the BMS definition in the introduction. General holistic outcomes include the quality of life or overall well-being, containing all three aspects of body, mind, and spirit. Studies utilized “post”, “follow-up”, “maintenance effect”, and “overall effect” to demonstrate the time period of effectiveness. Due to their different understandings of the meaning of those terms, the time periods presented were not unified. To make it clear and unified, we used post, follow-up (from baseline to the last data collection time point), and maintenance effect (from post-intervention to the last data collection time point) to demonstrate the between-group effectiveness in the following subsections. In this review, we only presented statistically significant results.

Body-related Outcomes. All studies with body-related outcomes were analyzed. The five most frequently reported body-related outcomes are effects on the disease, general functional conditions, specific functional conditions, general physical conditions, and specific physical conditions. 66.67% of the studies reporting general functional conditions showed statistically significant effectiveness; 60% reporting specific physical

conditions were significantly effective; half reporting specific functional conditions and general physical conditions demonstrated statistically significant effectiveness; 37.5% reporting effects on the disease were significantly effective.

Less than half studies^{3,23,25,28,30,31,33,34} reported effects on the disease, including the changes in physical symptoms, severity of Atopic Dermatitis, lung function, organ function, and pregnancy. Among them, Xie et al³⁰ reported post effectiveness in severity of Atopic Dermatitis ($F=4.827$, $p<.05$, $\eta^2=.042$); Zhang et al (2016) reported a post effect on lung function ($t=2.077$, $p=0.046$).

For general functional conditions, six studies^{20,22,23,25,34,37} reported daily functioning, functional well-being, functional impairment, physical function, and role-physical function. Among them, Chan et al²³ reported follow-up effect ($F=6.01$, $p<.05$, $\eta^2=.02$) in daily functioning, and Rentala et al³⁷ reported follow-up effect ($F(4460)=23.35$, $p<.001$, $\eta^2=0.169$) in functional impairment. Meanwhile, Zhou²² and Zhang et al³⁴ both reported post-intervention effectiveness in physical function ($t=2.75$, $p<.05$; $t=6.122$, $p<.001$), and Zhou²² further reported post-intervention effectiveness in role-physical function ($t=2.45$, $p<.05$).

In terms of more specific functional conditions, six studies^{24,25,28,33,35,38} reported sleep quality, activity, general vitality, appetite and self-care. Three studies reported significant results: Fung et al²⁴ reported post-intervention effect ($F(2, 178)=3.39$, $p=.036$, $\eta^2p=.037$) in general vitality; Sang³⁸ reported post-intervention effect in appetite and sleep ($t=-2.368$, $p=.029$); Xue and Xue³³ reported post-intervention

effect in both activity ($t = 4.343$, $p = .000$) and self-care ($t = 2.859$, $p = .006$).

For physical conditions, six studies^{20,25,29,31,32,35} reported physical well-being, physical health, physical quality of life (QOL) and health problem. Three^{29,31,32} reported significant results with post-intervention effectiveness in general physical condition ($t = -5.341$, $p = .000$; $t = 6.39$, $p < .01$; $t = -5.341$, $p < .001$, respectively).

Regarding more specific physical conditions, five studies^{23,25,26,28,38} reported more specific physical conditions, including physical distress, physical pain, energy and physical strength, destruction, bodily irritability and somatization, and three reported effectiveness: Chan et al²³ reported the maintenance effect ($F = 6.55$, $p < .01$, $\eta^2 = .03$) and follow-up effect ($F = 12.95$, $p < .01$, $\eta^2 = .05$) on physical distress as significant, and Lu et al²⁶ and Sang³⁸ reported post effectiveness in somatization ($p < .05$; $t = -2.306$, $p = .033$). Additionally, two studies reported knowledge of physical diseases, and both reported post effectiveness (Sun and Cui²⁸: $t = 6.795$, $p < .05$; Zhang et al³⁴: $t = 4.385$, $p < .001$).

Mind-related Outcomes. All studies reported mind-related outcomes, which were synthesized into four categories: general mental and emotional health, depression, anxiety, and other subcategories of mental and emotional conditions.

For general mental and emotional health, half studies^{20,22,25,26,29-34} reported emotion, emotional well-being/function/regulation/vulnerability, mental function, psychological health/function/QOL, in which 70 percent^{22,26,29,31-34} showed post effectiveness. Although Xie et al³⁰ showed nonsignificant post effectiveness, its follow-up effectiveness was significant ($F = 6.588$, $p < .05$, $\eta^2 = 0.056$). Note that Lau et al²⁵ presented the comparison group of Cognitive Behavioral Therapy (CBT) more effective than IBMS in emotional vulnerability ($\gamma = -.13$, $p < .05$).

In terms of subcategories of mental and emotional health, 12 articles^{20-22,24-27,31,35-38} reported depression. Among them, six studies^{22,24-26,31,38} showed post effectiveness in depression. Three studies reported follow-up effectiveness: Rentala et al³⁷ ($F(4460) = 29.87$, $p < .001$, $\eta^2 = 0.206$), Rentala et al²⁷ ($F(6,1212) = 156.70$, $p < .01$, $\eta^2G = 0.13$), and Xiong et al³¹ ($t = 7.22$, $p < .05$).

For anxiety outcomes, twelve studies^{3,20,22-27,30,35,36,38} reported anxiety and its subcategories including state anxiety, trait anxiety, death anxiety, and phobia anxiety. Half^{20,22,24-27,30,35,36,38} reported the overall anxiety, in which four^{22,26,36,38} reported post effectiveness and two^{27,30} reported follow-up effectiveness in overall anxiety. Although Xie et al³⁰ showed nonsignificant results in post-intervention, its follow-up effectiveness was statistically significant ($F = 6.027$, $p < .05$, $\eta^2 = 0.051$). Among subgroups of anxiety, Chan et al³ and Chan et al²³ showed post and follow-up effectiveness in state anxiety; Chan et al²³ showed effectiveness in trait anxiety (post: $F = 4.09$, $p < .05$, $\eta^2 = .02$; follow-up: $F = 4.90$, $p < .05$, $\eta^2 = .02$). Sang³⁸ showed post effectiveness in phobia anxiety ($t = -2.725$, $p = .014$).

Eleven studies contained one or more other subcategories of mental and emotional conditions except for depression and anxiety: stress,^{24,27,35} affection,^{21,23} coping,^{26,38} self-esteem,^{30,35} self-efficacy,²² lability/negativity,³⁰ anger, mental confusion, and mood,²⁰ hostility, paranoid ideation, psychoticism, automatic thoughts, and loneliness,³⁸ and dysfunctional attitudes of emotional distress, including achievement, self-control, and dependency.²⁵ Among them, less than half^{22,24,26,30,38} showed post effectiveness in one or more outcomes. Although showing post nonsignificant effectiveness, Chan et al²³ exhibited both maintenance and follow-up effectiveness in negative affection ($F = 3.79$, $p < .05$, $\eta^2 = .02$; $F = 6.47$, $p < .01$, $\eta^2 = .03$ respectively). Rentala et al²⁷ and Xie et al³⁰ also presented follow-up effectiveness on general stress ($F(6,1236) = 166.10$, $p < .01$, $\eta^2G = 0.16$) and lability/negativity ($F = 4.975$, $p < .05$, $\eta^2 = 0.043$) respectively.

Spirituality-related Outcomes. Only Liu et al,³⁶ Rentala et al,³⁷ and Rentala et al²⁷ did not contain a spirituality-related outcome (but they included a general holistic outcome to be qualified in our review), and the rest of the articles all reported spirituality-related outcomes. The spirituality-related outcomes were summarized into four categories: general spiritual well-being, specific subgroups in spiritual well-being, social well-being, and family-related outcomes.

For general spiritual well being or spiritual self-care, four studies^{20,24,25,33} reported the outcome in which three showed post effectiveness: Lau et al²⁵ ($\gamma = -.20$, $p < .05$), Targ and Levine²⁰ ($t = -2.98$, $p = .003$), and Xue and Xue³³ ($t = 4.303$, $p = .000$).

Reported specific subgroups in spiritual well-being included spiritual disorientation,²³⁻²⁵ posttraumatic growth,^{29,32} faith and belief,^{20,33} meaning and peace,^{20,33} nonattachment and mindful awareness,^{24,25} spiritual practice, spiritual growth, embracing life, and fatalism,²⁰ tranquility and resilience,²³ afflictive sensation and ideation.²⁴ Except for Lau et al,²⁵ other six studies all exhibited post effectiveness in one or more outcomes of specific subgroups in spiritual well-being. Only Chan et al²³ showed maintenance and follow-up effectiveness: it presented maintenance effectiveness in tranquility ($F = 4.56$, $p < .05$, $\eta^2 = .02$), and follow-up effectiveness in tranquility ($F = 24.86$, $p < .01$, $\eta^2 = .09$), disorientation ($F = 7.18$, $p < .01$, $\eta^2 = .03$), and resilience ($F = 5.33$, $p < .05$, $\eta^2 = .02$). Lee et al²¹ claimed to have significant improvement in spiritual health by improving peace of mind, life satisfaction, and optimism about the future without data support.

Social well-being and its related terms consisted of social well-being,²⁰ social relationship,²⁹ social function,^{22,34} social condition,²⁵ social QOL,^{31,32} social support,²⁸ interpersonal sensitivity,^{26,38} social avoidance and social distress,³⁸ and social phobia.³⁰ Among them, five studies showed post effectiveness: Tang et al²⁹ ($t = -6.586$, $p = .000$), Xiong et al³¹ ($t = 4.14$, $p < .01$), Xiong and Mao³² ($t = -6.586$, $p < .001$), Zhang et al³⁴ ($t = 6.747$, $p < .001$), Sang³⁸ (interpersonal sensitivity: $t = -3.822$, $p = .001$; total social avoidance and social distress: $t = -4.927$, $p = .000$). Although Xie et al³⁰ exhibited

nonsignificant post effectiveness, it was the only study showing follow-up effectiveness ($F = 5.692$, $p < .05$, $\eta^2 = 0.049$).

For family related outcomes, seven studies reported family function,²⁴ family life,³³ lack of family support,³⁵ understanding of family and care,²⁸ childbearing importance,^{3,23} marital satisfaction,²³ and quality of parent-child relationships.³⁰ Among them, four studies exhibited post effectiveness: Chan et al²³ (childbearing importance: $F = 10.83$, $p < .01$, $\eta^2 = .04$); Chan et al³ ($F = 4.810$, $p < .01$); Sun and Cui²⁸ ($t = 2.783$, $p < .05$); Xue and Xue³³ ($t = 0.47$, $p = .002$). Only Chan et al²³ showed maintenance and follow-up effectiveness on its family-related outcomes: they exhibited maintenance and follow-up effectiveness in marital satisfaction, though not post-intervention (maintenance: $F = 4.42$, $p < .05$, $\eta^2 = .02$; follow-up: $F = 4.94$, $p < .05$, $\eta^2 = .02$). Chan et al²³ also presented follow-up effectiveness in childbearing importance ($F = 20.53$, $p < .01$, $\eta^2 = .08$).

Holistic Outcomes. A study with holistic outcomes means either it contains a general holistic outcome or includes at least one outcome for each of the body-, mind-, and spirituality-related outcomes. Table 3 included studies that considered group by time interaction in their between-group analysis, and were effective in either a general holistic outcome^{25,27,33,37} or in all three dimensions.^{23–25,30,33} The complete table of the data collection and outcome information for all included articles is available upon request.

Among all 20 articles, half^{20,22,25,27,30,33–37} reported general holistic outcomes, including holistic well-being with Body-Mind-Spirit Well-Being Inventory (BMSWBI)^{27,36,37} and overall QOL.^{20,22,25,30,33–35,37} Xue & Xue³³ showed post significance (QOL-AD: $t = 3.787$, $p = .000$; EDAS Total: $t = 0.339$, $p = .003$), and Lau et al,²⁵ Rentala et al,³⁷ Rentala et al²⁷ reported follow-up effectiveness ($\gamma = -.18$, $p < .01$; BMSWBI: $F(4460) = 48.15$, $p < .001$, $\eta^2 = 0.295$; WHOQOL-BREF: $F(4460) = 49.18$, $p < .001$, $\eta^2 = 0.300$; $F(6,1200) = 156.40$, $p < .01$, $\eta^2 = 0.13$).

For studies that respectively reported body, mind, and spirituality-related outcomes, only five studies^{23–25,30,33} utilized group by time interaction in their between-group analysis and showed effectiveness in all three dimensions, either post, maintenance, or follow-up ones.

Risk of Bias

Addressing the fifth research question, Table 4 reported the quality of the studies which varied widely. Three studies were rated as high-quality, 13 were rated as medium-quality, and four were rated as low-quality. In terms of each quality assessment criteria, thirteen (65%) studies report adequate random sequence generation; two (10%) reported adequate allocation concealment; three (15%) studies reported appropriate blinding of participants and interventionists; no study reported proper blinding of outcome assessment; 14 (70%) studies reported

complete outcome data; 18 (90%) studies covered all results that the researchers intended to explore.

Discussion

This paper was set out to answer five research questions: (1) How were BMS definitions presented, and were they influenced by cultural and philosophical values? (2) What activities were included in interventions that adopted the BMS model, and how were they related to BMS dimensions? (3) What were interventionists' backgrounds, and was there BMS training for interventionists? (4) What kinds of holistic outcomes did interventions that applied the BMS model include? And (5) What were their effectiveness and qualities of studies?

Although most studies referred to the BMS definition by the BMS team of CBH at HKU¹⁰ and many^{3,22–33} brought up “holistic” in their definitions, only fewer than half of studies^{3,24,25,27,31,32,34} mentioned “interrelation” or its equivalents in their definitions. Without taking interrelation into consideration, researchers may not design an intervention that thoroughly aligns with the BMS model, which may also curtail their justification on how the separate effectiveness of each dimension contributes to the holistic effectiveness. Additionally, social relationships were not clearly defined into one of the three dimensions of the BMS models, that even the same person who defined the BMS model put the same concept to the different dimensions, either in mind or spirituality.^{3,12} An Australian researcher in spirituality illustrated that spirituality contains not only religious practices, but more broadly, the relationship with other people.³⁹ This makes social relationships more reasonable to include in the spirituality dimension. There were researchers spontaneously perceiving the BMS model tantamount to other concepts such as complementary and alternative medicine (CAM)^{16,20} without providing a clear rationale. Without an authentic BMS definition in consensus, it is certainly challenging to understand how the BMS model differentiates from and relates to other concepts.

Many of the studies included in our review^{22,27,28,30–32,34–36} mentioned that the BMS concept was extracted from cultural and philosophical values, in which almost all studies showed that it was from Eastern culture or philosophy. It seemed reasonable since those studies employed the BMS model by the CBH team at HKU¹⁰: most philosophical values cited were Eastern ones such as Confucianism, Taoism, and Buddhism.^{30,35,36} Nevertheless, holism, as a key concept in the BMS model, has been illustrated in diversified cultures and philosophies all over the world.^{4,40} In this case, the BMS model may not be restricted to the Eastern cultures but can be adjusted to a broader range of cultural contexts.

Although Lee et al¹⁰ provided a recommended structure for included activities, not all studies adequately followed this suggested structure, and their included activities' functions were not very clear.^{20,22,30} The recommended structure of included activities did not explicitly illustrate the interrelation among those included activities. In order to establish an intervention

aiming to improve holistic well-being, it is suggested to include activities that could independently improve all three dimensions or a set of activities that could jointly affect all three aspects. However, most studies did not categorize the activities according to their functions, except for Fung et al,²⁴ Lee et al,²¹ and Zhang et al³⁴ The lack of connection could also exert difficulties for future researchers to design a curriculum for their interventions. The function of key activities is recommended to state in the introduction or method section so that it is justifiable to include them in the intervention.

The training process was frequently missed out from the studies.^{20,22,23,26,28,29,31,32,36,38} The interventionists' disciplines, along with their corresponding training backgrounds, were diversified. Despite the professional training specific to disease conditions, those interventionists may not be assumed to have fully comprehended BMS knowledge and qualify for conducting the intervention without BMS training with its three key concepts. In many of the included studies that had trainings for interventionists, the training details were not clear enough.^{27,30,35,37} Without proper BMS training, the quality of those interventions could be undermined because of the interventionists' lack of understanding of the key concepts in the BMS model.¹⁵ It is recommended to make sure that at least one of the researchers, intervention designers, or interventionists contains a sufficient understanding of the BMS model.

Among studies that respectively reported body, mind, and spirituality-related outcomes, some only reported effectiveness in two or fewer aspects of body, mind, and spirit.^{3,26} In those cases, it was questionable as to whether those interventions could be considered holistically effective. It is recommended to include a general holistic outcome such as holistic well-being to avoid confusion and to better comply with the key construct.

Another issue regarding the effectiveness is that it was hard to know whether the interventions that adhered to the BMS model were effective in the long run. Since more than half of the included studies did not include follow-up assessments,^{20–22,26,28,29,32–36} it was difficult to perceive whether the effect of those interventions could sustain. Instead of merely improving certain diseases, the intervention is expected to adjust the balance among body, mind, and spirit and enhance individuals' long-term overall well-being.¹⁰ Therefore, follow-up information regarding participants' conditions should be collected in order to understand whether the effectiveness of those interventions could maintain in the long term.⁴¹

In order to conduct more systematic reviews on the BMS models and applied interventions in the future, researchers need to carry out more rigorous RCT studies to ensure high quality. For example, during the research design process, researchers should pay attention to allocation concealment, the blinding process, as well as the design of comparison groups, since these aspects are the most frequently missed out in the existing studies, which would affect the study results on effectiveness.⁴²

Implications

It is recommended to establish a clear definition for the BMS model, and to provide guidelines for researchers to fully understand how to apply the model in their studies, including the design of interventions, and selection of activities and outcomes that cover the model's key concepts. Furthermore, some studies did not name their interventions as BMS in the title.^{27,33} Researchers are suggested not only searching BMS as intervention name in title, but searching it in full text, in order to obtain a full list of the qualified interventions. Also, to present the overall effectiveness of interventions that applied the BMS model, researchers are highly recommended to examine the effectiveness of holistic outcomes. Lastly, future researchers are recommended to establish a BMS training requirement because of the professional skills this holistic intervention demands. Furthermore, researchers are suggested setting up a practical guideline on the BMS training format and content, which helps them to establish a standard training process, ensuring their solid understanding of the BMS model before actually applying it.

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Author Contributions

TL and IC design the study. TL and XH performed the literature search. TL, XH, and IC conducted the data extraction. TL and XH did data analyses and wrote the first draft of the manuscript. IC reviewed and edited the manuscript. All authors approved the final version of the manuscript for submission.

Ethical Approval

This study did not warrant institutional review board review as no human subjects were involved.


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ORCID iD

Tongtong Li  <https://orcid.org/0000-0002-7002-533X>

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Author Biographies

Tongtong Li is a second-year applied psychology student at University of Southern California. She received a bachelor's degree in industrial and systems engineering and a dual master's degree in health administration and gerontology from University of Southern California. She is also an independent life coach and researcher. She is interested in body-mind-spirit intervention, mental health for caregivers, end-of-life care, marriage and family.

Xinyue Hu is a course designer in Phofly, a professional training company for caregivers for elders in China. She received a bachelor's degree in sociology from Fudan University and a master's degree in social science.

Iris Chi is a professor at Shanghai Lixin University of Accounting and Finance, the Chinese-American Golden Age Association/Frances Wu Chair for the Chinese Elderly at the USC Suzanne Dworak-Peck School of Social Work, and a senior scientist at the USC Edward R. Roybal Institute on Aging. Prior to joining USC, she taught at the University of Hong Kong (HKU) and was the founding director of Sau Po Centre on Aging at HKU. An expert in health and gerontology, Dr. Chi has participated in more than 100 studies and published over 300 articles and book chapters. She has been elected as a Fellow of the Gerontological Society of America, the American Academy of Social Welfare and Social Work, interRAI, the Phi Tau Phi Scholastic Honor Society of America, and IAGG (Asian & Oceania region). Dr. Chi is an honorary professor, consultant and senior advisor to more than 30 local and overseas universities and research institutes. She is also the associate editor and an editorial board member for many gerontology and social work journals.