

# BMJ Open Biopsychosocial correlates of hope in Asian patients with cancer: a systematic review

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**To cite:** Mahendran R, Chua SM, Lim HA, *et al*. Biopsychosocial correlates of hope in Asian patients with cancer: a systematic review. *BMJ Open* 2016;**6**:e012087. doi:10.1136/bmjopen-2016-012087

► Prepublication history and additional material is available. To view please visit the journal (<http://dx.doi.org/10.1136/bmjopen-2016-012087>).

Received 30 March 2016  
Revised 21 June 2016  
Accepted 31 August 2016



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## ABSTRACT

**Objective:** To examine the factors associated with hope and hopelessness in patients with cancer in Asian countries, and the instruments used to measure hope and hopelessness.

**Methods:** A comprehensive systematic review was conducted with search terms, including cancer, hope, hopelessness and individual Asian country names, on CINAHL, Embase, PsycINFO, PubMed and Scopus databases. Only quantitative studies on adult cancer populations in Asia examining hope or hopelessness were included.

**Results:** A total of 2062 unique articles were retrieved from the databases, and 32 studies were selected for inclusion in this review. Hope and hopelessness were most frequently measured with the Herth Hope Index and the Mental Adjustment to Cancer Scale, respectively. The biopsychosocial factors that were most consistently associated with hope and hopelessness included sociodemographic variables (education, employment and economic status); clinical factors (cancer stage, physical condition and symptoms); and psychosocial factors (emotional distress, social support and connections, quality of life, control or self-efficacy, as well as adjustment and resilience).

**Discussion:** There is a need for more studies from South and Southeast Asia as most studies hailed from East Asia. This review highlighted the possibility of cultural differences influencing factors related to hope, suggesting that cross-cultural studies specifically would facilitate understanding behind these variations, although future reviews on hope should also include studies on hopelessness for a comprehensive understanding of the concept. Finally, more longitudinal research could be conducted to assess whether the factors associated with hope and hopelessness change over time and disease progression.

## INTRODUCTION

Psychological and psychiatric literature have defined hope as a yearning for the amelioration of a dreaded outcome, operationalising it as a positive goal-related (future-oriented)

## Strengths and limitations of this study

- This is the first systematic review conducted that focuses on hope in the Asian cancer population.
- The inclusion of hopelessness in the current review presented a more comprehensive understanding of hope and its antithetical concept in the oncology setting.
- This review attempted to include all articles on hope in patients with cancer in Asian countries, including the non-English articles, which provided a more comprehensive view of the target population.
- This review, however, is limited by the availability of articles. Four articles were not available despite repeated contacts with library and authors, and thus not included.
- Although not a weakness specific to our review, the apparent lack of longitudinal studies conducted in Asian oncology settings may limit the conclusiveness of the directionality of the correlates reported here.

motivational state and a dispositional trait that signalled a tendency to adopt a positive outlook.<sup>1 2</sup> Hope, in other words, is a confident, yet uncertain, expectation of achieving a future good that, to the hoping person, is realistically possible, and personally significant.<sup>3</sup>

Hope enables individuals to deal with serious and prolonged threats to their physical and psychological well-being,<sup>4</sup> and has been established as an important therapeutic factor in medicine and recovery.<sup>2 5</sup> In oncology settings, it facilitates coping with the cancer diagnosis,<sup>6</sup> through making and sustaining meaning,<sup>1</sup> while strengthening resilience regardless of prognosis.<sup>7</sup> Although hope has not been shown to improve prognosis,<sup>8</sup> patients without hope (ie, patients who are hopeless) are often depressed and lack the will to live.<sup>5</sup>

Dispositional theories of hope have proposed two components of hopeful thinking:

pathway thinking, or the ability to conceptualise the means (pathways) through which goals can be achieved; and agency thinking, or the perceived capacity to use such pathways.<sup>9</sup> Although hope has often been linked to other cognitive and motivational theories, it remains distinct from these constructs. It differs from optimism in its view of goal-directed positive cognitive processes, and self-efficacy in its cross-situational perspective and equal emphasis on agency and pathway thinking.<sup>10</sup> Agency and pathway components have been associated with better outcomes such as lower levels of depression and anxiety,<sup>11</sup> better quality of life and physical health, and higher positive affect.<sup>12</sup>

On the other hand, hopelessness has been viewed as an antithetical concept to hope, with both constructs hypothesised to be lying on a continuum rather than being distinctly different.<sup>1 4</sup> Hopelessness is operationalised as a system of negative expectations concerning oneself and one's future life,<sup>13</sup> or a tendency to lack hopeful thinking.<sup>14</sup> It is conceptually distinct from concepts such as catastrophising, which refers to tendency to have a negative cognition of focusing on and exaggerating a negative outcome.<sup>15</sup>

To date, there are three reviews on hope in patients with cancer.<sup>4 12 16</sup> The first review,<sup>16</sup> on articles published between 1982 and 2005, summarised the importance of hope to nurses: levels of hope were not associated with sociodemographic predictors, cancer type and stage, but positively associated with control, coping and spiritual well-being, and negatively associated with physical well-being and fatigue. The second review,<sup>12</sup> of oncology nursing literature between 2005 and 2009, corroborated these findings: hope was linked to better health and quality of health, higher levels of control, more positive affect, and reduced depressive and anxious symptomatology. The final review updated the literature on hope in oncology up to 2011,<sup>4</sup> and included perspectives of caregivers, family members and healthcare professionals. The review confirmed earlier findings that hope reduced the impact of psychological distress and fatigue in patients.

As the earlier reviews were conducted without clear adherence to either of the gold-standard Quality of Reporting of Meta-Analyses (QUOROM)<sup>17</sup> or Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)<sup>18</sup> guidelines, they do not lend themselves well to replication. Also, the reviews by Chi<sup>16</sup> and Butt<sup>12</sup> may not have been exhaustive because they focused primarily on hope, and not its antithetical concept of hopelessness. In addition, the review by Olver<sup>4</sup> included studies on hope in patients as reported by proxies, namely caregivers and healthcare professionals, which may not be a true reflection of the perspectives of hope in patients with cancer. Furthermore, only articles published in English were examined, with the authors themselves acknowledging the inadequate investigation into the cross-cultural validity of these findings.

Comparative studies in the UK have suggested cultural variation in the concept of hope, noting higher levels of hopelessness in patients with cancer of Asian background than their Caucasian counterparts.<sup>19 20</sup> Aside from differences in understanding and conceptualising hope,<sup>21 22</sup> patients of Eastern origin more commonly attribute illness to predestined causes than patients of Western origin.<sup>23</sup> As these cultural differences could be due to differences in socioeconomic and education level,<sup>20</sup> or the migration effects and position of immigrants as outsiders within a national health service,<sup>23</sup> there exists a need to examine hope and hopelessness in Asian patients with cancer within Asian countries to better understand the concept in this population.

### The present study

The growth of Asian populations, increased prevalence of cancer<sup>24</sup> and significant psychiatric sequelae in this population<sup>25</sup> call for a more nuanced appreciation of hope in culturally unique Asian settings<sup>26 27</sup> to guide the development of culturally relevant support services for oncology patients in Asia. Thus, the objectives of the present systematic review are to examine (1) the instruments used to measure hope and hopelessness and (2) the biopsychosocial factors associated with hope and hopelessness in patients with cancer in Asian countries.

### METHODS

This review adhered to the PRISMA guidelines (see online supplementary file 1).<sup>18</sup> The review protocol can be retrieved from the PROSPERO International Prospective Register of Systematic Review.<sup>28</sup>

### Search strategy

For the purposes of this review, (1) hope and hopelessness were conceptualised as lying on a continuum or antithetical, but not separate, and (2) Asia was defined as countries in the East, South and Southeast Asia for cultural homogeneity.

Articles were retrieved from CINAHL, Embase, PsycINFO, PubMed and Scopus databases from inception to May 2015. Reference lists of relevant articles were searched by hand to include additional articles not captured by the database searches. The following search terms were applied: cancer; oncology; tumor; neoplasm; carcinoma; malignant; sarcoma; Asia; Burma; Cambodia; Vietnam; Japan; Korea; Mongolia; Thailand; Singapore; China; India; Malaysia; Indonesia; Laos; Myanmar; Philippines; Bangladesh; Taiwan; Hong Kong; Pakistan; Sri Lanka; hope; hopelessness (see online supplementary file 2). No language or date restrictions were imposed, although all foreign language articles had English titles. The 3174 items from all searches (including reference lists) were exported into EndNote X7; 2062 unique entries remained after the removal of duplicates.

### Study selection criteria

Two authors independently and conservatively subjected the titles and abstracts of the 2062 entries to the following inclusion criteria (agreement  $\alpha=0.90$ ): (1) peer-reviewed journal articles, to ensure the quality of research; (2) only primary quantitative research investigating the correlates of hope and hopelessness (as earlier defined); (3) oncology populations in Asian countries (as previously defined); and (4) adult populations (defined as 18 years old and above). Owing to the exploratory nature of this review, no cancer site or stage restrictions were imposed. Studies were excluded if they (1) were qualitative or scale validation studies; (2) recruited children, adolescents or cancer survivors; or (3) used family members, caregivers or healthcare professionals as proxies of patients' perspectives.

### Data selection and extraction

Of the 2062 entries, 65 were selected for a full-text review. Four potentially relevant entries<sup>29–32</sup> were not included because the full-text articles (in non-English language journals) were unobtainable despite repeated library requests and attempts at contacting authors. The remaining 61 full-text articles, including non-English articles, were reviewed for eligibility based on the inclusion criteria independently by two authors with a fluent

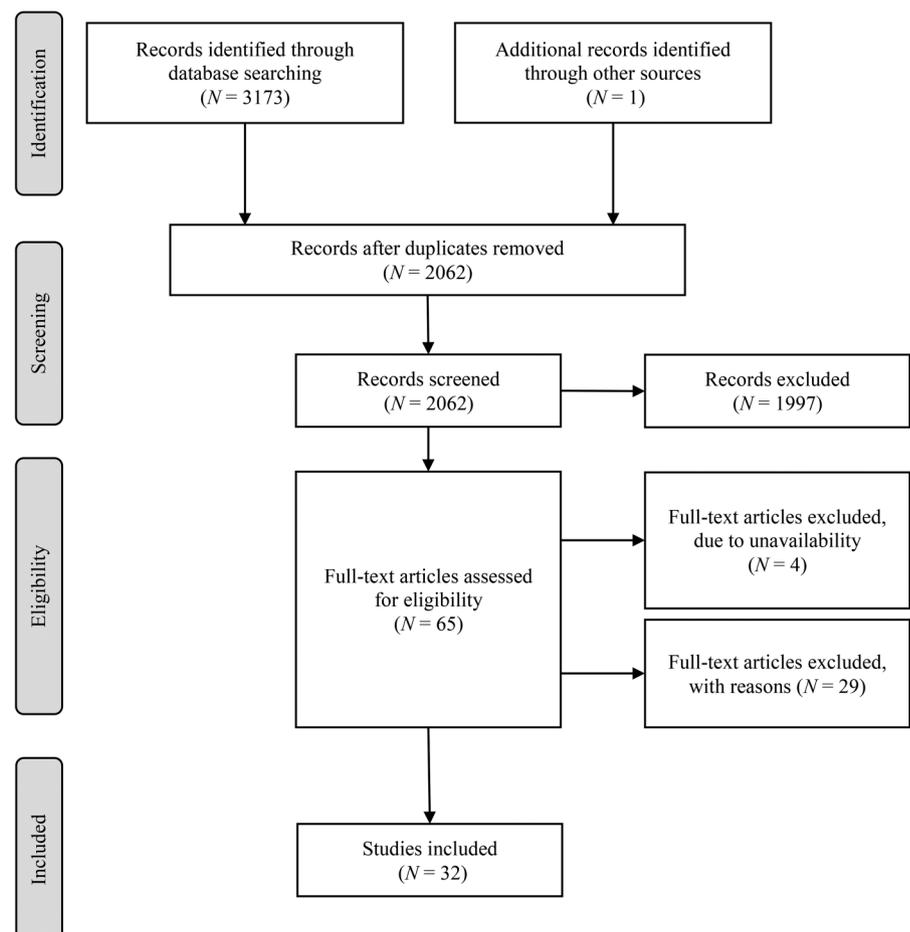
command of the publication language. A consensus between three authors was necessary when there was disagreement between the two authors (agreement  $\alpha=0.90$ ).

A total of 32 journal articles were included in the review. The quality of each study was assessed by two reviewers with the modified STROBE checklist,<sup>33</sup> which consists of 18 items examining study design, participants, statistical analysis, results, limitations, outcomes and study generalisability. Items were scored 0 (not done), 1 (done partially) and 2 (done well), with double scores for statistical methods and outcomes. Total scores range from 0 to 40. Study quality was then rated as low, moderate or high according to the tertile of scores. The quality of all identified studies was found to be either moderate or high, and they were included in the current review.

Data extracted from included articles comprised (1) study design; (2) patient characteristics; (3) measurement of hope or hopelessness; and (4) factors related to hope or hopelessness (including the measurements used and the relationship between the factors and hope or hopelessness). The flow diagram of the study selection is presented in figure 1.

To summarise the state of the literature for each identified variable, a summary code was applied to each factor, as suggested by Sallis *et al.*<sup>34</sup> The percentage of findings supporting each association with hope or

**Figure 1** PRISMA flow diagram of study selection. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.



hopelessness was calculated by the number of studies supporting the expected association divided by the total number of studies examining the factor. Based on this percentage, the variable will be classified as: no association, indeterminate or inconsistent, or positive or negative association (see table 1).

## RESULTS

### Characteristics of included studies

The majority of the identified studies (N=28) were cross-sectional, while four were longitudinal studies.<sup>35–38</sup> Sample sizes varied from 50<sup>39</sup> to 1334 participants.<sup>40</sup> A total of 11 studies were based on mixed samples of patients with various cancer types, nine were on breast cancer<sup>41–49</sup> and six were on lung cancer.<sup>36–38 40 50 51</sup> The remaining studies involved participants diagnosed with haemolymph neoplasm,<sup>52</sup> nasopharyngeal carcinoma,<sup>15</sup> colorectal cancer,<sup>35</sup> oral cavity cancer,<sup>39</sup> oesophageal cancer<sup>53</sup> and cervical cancer.<sup>54</sup> Almost all studies (N=31) involved various cancer stages; only one study exclusively involved patients with recurrent or metastatic cancer.<sup>45</sup>

The majority of the studies (N=31) were conducted in East Asia, with 3 from mainland China,<sup>46 53 54</sup> 2 from Hong Kong,<sup>35 39</sup> 11 from Taiwan,<sup>15 41 51 52 55–61</sup> 8 from Korea<sup>42–44 48 49 62–64</sup> and 7 from Japan.<sup>36–38 40 45 50 65</sup> Only one study was conducted in Southeast Asia (Malaysia).<sup>47</sup>

Table 2 presents a summary of the studies included in this review.

### Measurements of hope and hopelessness

Hope and hopelessness were examined in 20 and 12 studies, respectively. State hope was measured in 18 studies, with the majority (N=12) using the Herth Hope Index (HHI),<sup>3</sup> four using the Nowotny Hope Scale (NHS)<sup>66</sup> and two using the Hope Scale by Kim and Lee (KLHS).<sup>67</sup> Trait hope was measured in two studies with the Snyder Hope Scale (SHS).<sup>68</sup> State hopelessness was measured in 11 studies; seven used the Mental Adjustment to Cancer Scale (MAC),<sup>69</sup> one used the short version of the MAC (Mini-MAC)<sup>70</sup> and three used the Beck Hopelessness Scale (BHS).<sup>13</sup> Trait hopelessness was measured in one study with the Short Interpersonal Reactions Inventory (SIRI).<sup>71</sup>

**Table 1** Summary codes for strength of evidence of association of variables

| % of studies supporting association | Summary code | Meaning of code             |
|-------------------------------------|--------------|-----------------------------|
| 0–33                                | 0            | No association              |
| 34–59                               | ?            | Indeterminate, inconsistent |
| 60–100                              | +            | Positive association        |
|                                     | –            | Negative association        |

### Factors associated with hope and hopelessness

Table 3 provides a summary of the factors associated with hope and hopelessness.

#### Sociodemographic variables

Sociodemographic correlates of hope and hopelessness examined include age, gender, marital status, education, employment and economic status, religion and race.

Education, employment and economic status were more consistently associated with hope and hopelessness. Twelve studies examined education, with significant associations reported in 10 studies; education was positively correlated with hope<sup>41 42 52 58 60 62</sup> and negatively associated with hopelessness.<sup>37 38 47 53</sup> Six of 10 studies reported significant associations between employment status and hope; patients who were employed had higher hope<sup>42 52 58 60</sup> and lower hopelessness.<sup>45 57</sup> Economic status was a significant correlate in three of five studies; hope was correlated with higher income,<sup>46 49</sup> while patients who required financial support reported lower hope.<sup>52</sup>

The associations with age, gender, religion and race were less consistent. Significant associations were reported in only 6 of 14 studies; age was negatively associated with hope<sup>52 55 62</sup> and positively correlated with hopelessness.<sup>36 37 53</sup> Of the 10 studies that examined religion, 4 studies reported significant associations; religious participation was associated with higher hope<sup>41 49 55</sup> and lower hopelessness.<sup>47</sup> With regards to religious affiliations, hope was associated with Christianity<sup>41 55</sup> and Buddhism.<sup>55</sup> Race was identified in one study, but the direction of this association was not reported.<sup>47</sup> Of the three studies examining gender, only one study reported gender to be a significant factor; women had significantly higher levels of hope than men in a long-term care hospital while no significant results were found for patients in a general hospital.<sup>62</sup>

A majority of the 12 studies examining marital status reported no significant associations, with the exception of three studies; married patients had higher hope than patients who were unmarried<sup>39 55</sup> or separated.<sup>41</sup>

#### Clinical factors and outcomes

The clinical correlates associated with hope and hopelessness include cancer stage and type, awareness of diagnosis, treatment-related factors, physical condition, symptoms and clinical markers or end points.

Cancer stage, physical condition and symptoms were consistently associated with hope and hopelessness. Eight of 12 studies examining cancer stage reported significant associations; hope was associated with early stage<sup>41 62</sup> and localised, non-metastatic cancer,<sup>55</sup> while state and trait hopelessness were associated with advanced cancer stages.<sup>36–38 47 53</sup> Physical condition was a significant factor reported in 8 of 11 studies; these indicated hope with better physical health and functioning,<sup>35 49</sup> better performance status<sup>15</sup> and lower interference with functioning,<sup>55 61</sup> and hopelessness with poorer performance

**Table 2** Summary of individual studies

| No. | Study                               | Country | Type of cancer           | Cancer stage | Patients (% male) | Age   |           | Instruments (hope/hopelessness) | Instruments (other variables)  |
|-----|-------------------------------------|---------|--------------------------|--------------|-------------------|---|-----------|---------------------------------|--|
|     |                                     |         |                          |              |                   | Mean age (SD)/age group (%)                             | Age range |                                 |  |
| 1   | Hwang <i>et al</i> <sup>41</sup>    | Taiwan  | Breast cancer            | Various      | 120 (0%)          | 41.79 (9.83)  | 20–66     | NHS (Mandarin)                  | Mishel's Uncertainty in Illness Scale, and the Cohen's Interpersonal Support Evaluation List (Mandarin)  |
| 2   | Chen and Wang <sup>52</sup>         | Taiwan  | Haemolymph neoplasm      | Various      | 75 (54.7%)        | 40–49 (30.7%)   | 20–60     | HHI (Mandarin)                  | Personal Resource Questionnaire 85 Part-II (Mandarin)  |
| 3   | Lee <sup>44</sup>                   | Korea   | Breast cancer            | Various      | 122 (0%)          | 44.40 (7.62)  | 27–63     | HHI                             | Psychological adjustment to Breast Cancer Factor, Piper Fatigue Scale  |
| 4   | Chang and Li <sup>55</sup>          | Taiwan  | Various                  | Various      | 137 (NA)          | 51.9 (15.76)  | 19–84     | NHS (Mandarin)                  | Symptom distress scale, Physical self-maintenance scale and the Perception of control scale (Mandarin versions)                                    |
| 5   | Chen <sup>56</sup>                  | Taiwan  | Various                  | Various      | 226 (48.7%)       | NR  | ≥18       | HHI (Mandarin)                  | Pain Assessment Form, Perceived Meaning of Cancer Pain Inventory and Karnofsky Performance Scale (Mandarin)  |
| 6   | Hsu <i>et al</i> <sup>51</sup>      | Taiwan  | Lung cancer              | Various      | 164 (NA)          | NR  | ≥18       | HHI (Mandarin)                  | Brief Pain Inventory, and the Mishel Uncertainty Illness Scale (Mandarin)  |
| 7   | Lai <i>et al</i> <sup>15</sup>      | Taiwan  | Nasopharyngeal carcinoma | Various      | 115 (76.5%)       | 40–59 (59.1%)   | ≥20       | HHI (Mandarin)                  | Symptom Distress Scale-modified, and Coping Strategies Questionnaire-Catastrophising-Dis (Mandarin)  |
| 8   | Lin <i>et al</i> <sup>69</sup>      | Taiwan  | Various                  | Various      | 484 (47.7%)       | With pain: 58.06 (14.52)<br>Without pain: 58.50 (14.77) | ≥18       | HHI (Mandarin)                  | Brief pain Inventory, and the Karnofsky Performance Scale (Mandarin)   |
| 9   | Lin <i>et al</i> <sup>68</sup>      | Taiwan  | Various                  | Various      | 124 (47.6%)       | 57.50 (13.10)   | 24–89     | HHI (Mandarin)                  | Multidimensional Health Locus of Control Scales, Demographics and Disease sheet  |
| 10  | Uchitomi <i>et al</i> <sup>68</sup> | Japan   | Lung cancer              | Various      | 205 (60.0%)       | 61.9 (10.9)   | 22–83     | MAC (Japanese)                  | Structured Clinical Interview for DSM-III-R, Eysenck Personality Questionnaire-Revised and a 4-point verbal scale for pain and dyspnoea (Japanese) |
| 11  | Jo and Son <sup>42</sup>            | Korea   | Breast cancer            | Various      | 113 (0%)          | 40–50 (41.6%)   | 21–70     | NHS (Korean)                    | Mishel Uncertainty in Illness Scale, Ro's Korean Quality of Life Scale (Korean)  |
| 12  | Lin and Tsay <sup>60</sup>          | Taiwan  | Various                  | Various      | 124 (47.6%)       | 57.50 (13.10)   | 24–89     | HHI                             | Multidimensional Health Locus of Control   |
| 13  | Nagano <i>et al</i> <sup>66</sup>   | Japan   | Lung cancer              | Various      | 68 (74%)          | >60 (38%)   | ≤70       | SIRI (Japanese)                 | –  |
| 14  | Nakaya <i>et al</i> <sup>67</sup>   | Japan   | Lung cancer              | Various      | 1178 (71%)        | 64 (9)  | NA        | MAC (Japanese)                  | Eysenck Personality Questionnaire-Revised, Hospital Anxiety and Depression Scale (Japanese)  |

Continued

Table 2 Continued

| No. | Study                              | Country   | Type of cancer     | Cancer stage                | Patients (% male) | Age                         |           | Instruments (hope/hopelessness) | Instruments (other variables)  |
|-----|------------------------------------|-----------|--------------------|-----------------------------|-------------------|-----------------------------|-----------|---------------------------------|--|
|     |                                    |           |                    |                             |                   | Mean age (SD)/age group (%) | Age range |                                 |  |
| 15  | Ueda and Katsuno <sup>65</sup>     | Japan     | Various            | Various                     | 52 (50%)          | 72.27 (5.14)                | >65       | MAC (Japanese)                  | Visual analogue scale, Karnofsky Performance Status, Self-efficacy scale for advanced cancer (Japanese)  |
| 16  | Hou <i>et al</i> <sup>35</sup>     | Hong Kong | Colorectal cancer  | Various                     | 234 (62%)         | 64.44 (10.55)               | 29–82     | SHS (Mandarin)                  | Chinese Revised Life Orientation Test, Hospital Anxiety and Depression Scale and the Social Relation Quality Scale (Mandarin)  |
| 17  | Zhang <i>et al</i> <sup>46</sup>   | China     | Breast cancer      | Various                     | 159 (0%)          | 40–49 (40.88%)              | 18–65     | HHI (Mandarin)                  | Jalowiec Coping Scale, and the Xiao Shui-yuan Social Support Scale (Mandarin)  |
| 18  | Ho <i>et al</i> <sup>39</sup>      | Hong Kong | Oral cavity cancer | Various                     | 50 (42%)          | 60 (13.06)                  | NA        | SHS (Mandarin)                  | Post-traumatic Growth Inventory and the Life Orientation Scale-Revised (Mandarin)  |
| 19  | Kim <i>et al</i> <sup>43</sup>     | Korea     | Breast cancer      | Various                     | 196 (0%)          | 50.2 (9.7)                  | NA        | BHS                             | Beck Depression Inventory, Montgomery Asberg Depression Rating Scale, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire and assessment of peripheral venous blood samples for assessment of a subset of circulating lymphocytes |
| 20  | Shim and Hahm <sup>64</sup>        | Korea     | Various            | Various                     | 131 (60.3%)       | 52.5 (12.1)                 | NA        | Mini-MAC (Korean)               | Hospital Anxiety and Depression Scale, Schedule of Attitudes towards Hastened Death, Assessment of Chronic Illness Therapy-Spiritual Well-being scale and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (Korean)            |
| 21  | Shun <i>et al</i> <sup>61</sup>    | Taiwan    | Various            | Various                     | 182 (46%)         | 50.81 (10.4)                | 21–78     | HHI (Mandarin)                  | Fatigue Symptom Inventory, and the Karnofsky Performance Status (Mandarin)   |
| 22  | Ueta and Onishi <sup>45</sup>      | Japan     | Breast cancer      | Recurrent cancer/metastasis | 64 (0%)           | 58.33 (11.28)               | 33–82     | MAC (Japanese)                  | Visual analogue scale, Tri-axial Coping Scale (TAC-24) (Japanese)  |
| 23  | Lee <i>et al</i> <sup>67</sup>     | Taiwan    | Various            | Various                     | 234 (35.5%)       | 51–65 (44.9%)               | NA        | BHS (Mandarin)                  | Demoralisation Scale-Mandarin Version, Patient Health Questionnaire, McGill Quality of Life Questionnaire-Taiwanese version  |
| 24  | Jun and Ko <sup>63</sup>           | Korea     | Various            | Various                     | 120 (40.0%)       | 55.17 (NA)<br>45–65 (60.0%) | ≥22       | Hope Scale by Kim and Lee       | Fatigue Scale by Mendoza <i>et al</i> , and the Spiritual Well-being Scale by Paloutzian and Ellison   |
| 25  | Shimizu <i>et al</i> <sup>40</sup> | Japan     | Lung cancer        | Various                     | 1334 (71.4%)      | 64.2 (NA)                   | 26–88     | MAC (Japanese)                  | Hospital Anxiety and Depression Scale, and the Eysenck Personality Questionnaire-Revised (Japanese)  |

Continued

Table 2 Continued

| No. | Study                                    | Country  | Type of cancer     | Cancer stage | Patients (% male) | Age  |           | Instruments (hope/hopelessness) | Instruments (other variables)  |
|-----|--|----------|--------------------|--------------|-------------------|--|-----------|---------------------------------|--|
|     |  |          |                    |              |                   | Mean age (SD)/age group (%)                | Age range |                                 |  |
| 26  | Tae <i>et al</i> <sup>49</sup>           | Korea    | Breast cancer      | Various      | 214 (0%)          | 41–50 (38%)                                | ≥18       | HHI (Korean)                    | Zung Self-rating Depression Scale, Rosenberg Self-Esteem Scale, Health Self-rating Scale in Health and Activity Survey, Kang's Family Support Scale and visual analogue scales measuring pain and fatigue (Korean) |
| 27  | Chae and Kim <sup>62</sup>               | Korea    | Various            | Various      | 175 (55.3%)       | <60 (56.0%)                                | NA        | Hope Scale by Kim and Lee       | Cobb Family Support Scale  |
| 28  | Han <i>et al</i> <sup>53</sup>           | China    | Oesophageal cancer | Various      | 301 (72.0%)       | Male: 60.71 (10.9)<br>Female: 57.64 (10.9) | NA        | BHS (Mandarin)                  | Center for Epidemiological Studies Depression Scale, Multidimensional Scale of Perceived Social Support (Mandarin)   |
| 29  | Horii and Maekawa <sup>50</sup>          | Japan    | Lung cancer        | Various      | 203 (69.95%)      | 65.6 (10.0)                                | ≥20       | MAC (Japanese)                  | Life Adjustment Scale for Patients with Lung Cancer, Tangible Assistance Scale, Eastern Cooperative Oncology Group Performance Status and the Medical Outcome Study Short Form-9 (Japanese)                        |
| 30  | Ryu and Yi <sup>48</sup>                 | Korea    | Breast cancer      | Various      | 163 (0%)          | 51.5 (NA)                                  | 36–67     | NHS                             | Resilience Scale by Wagnild, Spousal Support Scale by Nam and the Quality of Life Scale by Ferrell   |
| 31  | Raja Lexshimi <i>et al</i> <sup>47</sup> | Malaysia | Breast cancer      | Various      | 216 (0%)          | 54.57 (11.00)                              | NA        | MAC (Malay and English)         | Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being (Malay or English)   |
| 32  | Yang <i>et al</i> <sup>54</sup>          | China    | Cervical cancer    |              | 224 (0%)          | 49.16 (10.11)                              | 22–79     | HHI (Mandarin)                  | Hospital Anxiety and Depression Scale, Life Orientation Scale-Revised and the General Self-Efficacy Scale (Mandarin)   |

BHS, Beck Hopelessness Scale; HHI, Herth Hope Inventory; KLHS, Kim and Lee Hope Scale; MAC, Mental Adjustment to Cancer Scale, Mini-MAC, Shortened MAC Scale; NHS, Nowotny Hope Scale; NR, not reported; SHS, Snyder's Hope Scale; SIRI, Short Interpersonal Reactions Inventory.

**Table 3** Summary of results

| Factors                                      | # of studies examining associations | Associations with hope* |     |   | Associations with hopelessness* |     |   | Summary code           |                |
|--|-------------------------------------|-------------------------|-----|---|---------------------------------|-----|---|------------------------|----------------|
|  |                                     | +ve                     | -ve | ? | +ve                             | -ve | ? | Association with hope† | % Studies (N)  |
| <i>Sociodemographic variables</i>            |                                     |                         |     |   |                                 |     |   |                        |                |
| Age (older)                                  | 14                                  |                         | 3   |   | 3                               |     |   | ??                     | 42.9 (6/14)    |
| Gender (female)                              | 3                                   | 1                       |     |   |                                 |     |   | ?                      | 33.33 (1/3)    |
| Marital status (married)                     | 12                                  | 3                       |     |   |                                 |     |   | 0                      | 25.00 (3/12)   |
| Education (education level)                  | 12                                  | 6                       |     |   |                                 | 4   |   | ++                     | 83.33 (10/12)  |
| Employment (employed)                        | 10                                  | 4                       |     |   |                                 | 2   |   | ++                     | 60.00 (6/10)   |
| Economic status                              | 5                                   | 3                       |     |   |                                 |     |   | +                      | 60.00 (3/5)    |
| Religion                                     | 10                                  |                         |     |   |                                 |     |   | ??                     | 40.00 (4/10)   |
| Participation                                |                                     | 3                       |     |   |                                 | 1   |   |                        |                |
| Affiliation (Christianity)                   |                                     | 2                       |     |   |                                 |     |   |                        |                |
| Affiliation (Buddhism)                       |                                     | 1                       |     |   |                                 |     |   |                        |                |
| Race   | 1                                   |                         |     |   |                                 |     | 1 | ?                      | 100.00 (1/1)   |
| <i>Clinical variables</i>                    |                                     |                         |     |   |                                 |     |   |                        |                |
| Cancer stage                                 | 11                                  |                         | 3   |   | 5                               |     |   | --                     | 72.72 (8/11)   |
| Cancer type                                  | 6                                   |                         |     |   | 1                               |     | 1 | ?                      | 33.33 (2/6)    |
| Awareness of diagnosis                       | 3                                   | 2                       |     |   | 1                               |     |   | ??                     | 100.00 (3/3)   |
| Treatment                                    | 9                                   |                         |     |   |                                 |     |   | ??                     | 66.67 (6/9)    |
| Surgery                                      |                                     | 2                       |     |   |                                 |     |   |                        |                |
| Combination of chemotherapy and radiotherapy |                                     | 1                       |     |   |                                 |     |   |                        |                |
| Frequency and duration                       |                                     |                         | 1   |   |                                 |     |   |                        |                |
| Outpatients                                  |                                     | 1                       |     |   |                                 |     |   |                        |                |
| Type of surgery                              |                                     |                         |     |   |                                 |     | 1 |                        |                |
| Physical condition                           | 11                                  | 5                       |     |   |                                 | 3   |   | ++                     | 72.73 (8/11)   |
| Symptoms                                     | 11                                  |                         | 8   |   | 3                               |     |   | --                     | 100.00 (11/11) |
| Mortality                                    | 2                                   |                         |     |   | 2                               |     |   | -                      | 100.00 (2/2)   |
| Immunity                                     | 1                                   |                         |     |   |                                 | 1   |   | +                      | 100.00 (1/1)   |
| <i>Psychosocial variables</i>                |                                     |                         |     |   |                                 |     |   |                        |                |
| Emotional distress                           | 9                                   |                         | 5   |   | 4                               |     |   | --                     | 100.00 (9/9)   |
| Demoralisation and resignation               | 3                                   |                         |     |   | 3                               |     |   | -                      | 100.00 (3/3)   |
| Quality of life                              | 5                                   | 3                       |     |   |                                 | 2   |   | ++                     | 100.00 (5/5)   |
| Adjustment and resilience                    | 4                                   | 3                       |     |   |                                 | 1   |   | ++                     | 100.00 (4/4)   |
| Coping responses                             | 4                                   | 3                       |     |   |                                 | 1   |   | ++                     | 100.00 (4/4)   |
| Uncertainty                                  | 3                                   |                         | 3   |   |                                 |     |   | -                      | 100.00 (3/3)   |
| Control and self-efficacy                    | 5                                   | 4                       |     |   |                                 | 1   |   | ++                     | 100.00 (5/5)   |
| Self-esteem                                  | 2                                   | 2                       |     |   |                                 |     |   | +                      | 100.00 (2/2)   |

Continued

Table 3 Continued

| Factors                            | # of studies examining associations | Associations with hope* |     |   | Associations with hopelessness* |     |   | Summary code |
|------------------------------------|-------------------------------------|-------------------------|-----|---|---------------------------------|-----|---|--------------|
|                                    |                                     | +ve                     | -ve | ? | +ve                             | -ve | ? |              |
| Personality                        | 4                                   | 3                       |     |   | 1                               |     |   | ++           |
| Social support and connections     | 10                                  | 7                       |     |   |                                 |     |   | ++           |
| Social support                     |                                     |                         |     |   |                                 |     |   |              |
| Support from medical professionals |                                     |                         |     | 1 |                                 |     |   |              |
| Social connections                 |                                     | 2                       |     |   |                                 |     |   |              |
| Satisfaction with nursing          |                                     | 1                       |     |   |                                 |     |   |              |
| Satisfaction with confidants       |                                     |                         |     |   |                                 |     |   |              |

\*Number of studies with significant associations.  
 †When four or more studies supported no association or an association, it was coded as 00, ++ or ---. ?? indicated a variable that had been studied by four or more studies, but the findings were inconsistent.

status.<sup>37 38 65</sup> Eleven studies examined the associations between experience of symptoms and hope or hopelessness; pain and fatigue were more frequently measured and showed consistent associations with hope and hopelessness. Hope was associated with bearable pain intensity,<sup>56</sup> lower pain severity<sup>51</sup> and lower pain interference in daily life.<sup>51 59</sup> Hope was also negatively correlated to fatigue,<sup>49 63</sup> fatigue intensity,<sup>15</sup> duration of fatigue and fatigue-related interference.<sup>61</sup> On the other hand, hopelessness was associated with pain severity,<sup>37 65</sup> dyspnoea<sup>37 38</sup> and the presence of other symptoms.<sup>45</sup>

Significant associations were reported in all three studies that examined awareness of diagnosis,<sup>53 58 60</sup> but the results were not consistent. In the studies included, ~58%<sup>53</sup> to 79%<sup>58 60</sup> of the patients were aware of their cancer diagnoses, while the remaining were either not aware or partially aware of the diagnoses due to physicians' or family members' decisions to conceal information about the diagnosis. While two studies reported that awareness of diagnosis was associated with higher hope,<sup>58 60</sup> patients who were aware of their diagnoses felt more hopeless than those unaware in another study.<sup>53</sup>

Treatment-related factors (ie, type of treatment, duration dose and location) were examined in nine studies, and six studies found significant associations between these treatment-related factors and hope or hopelessness.<sup>41 47 57 58 60 62</sup> These studies, however, examined different treatment-related factors, making results indeterminate. Patients who only underwent surgery reported higher hope than those who underwent only chemotherapy, or chemotherapy and surgery.<sup>41 62</sup> Patients who underwent a combination of chemotherapy and radiotherapy also reported higher hope than those who underwent either chemotherapy or radiotherapy alone.<sup>62</sup> Frequency and duration of chemotherapy treatment was negatively correlated with hope.<sup>41</sup> In addition, outpatients reported higher hope than inpatients.<sup>58 60</sup> Hopelessness was significantly correlated with type of surgery in patients with breast cancer.<sup>47</sup>

Associations between clinical markers or end points were less conclusive as they were only assessed in three studies.<sup>36 37 43</sup> State and trait hopelessness were related to increased mortality risk<sup>36 37</sup> and weaker cellular immunity.<sup>43</sup>

Only two of six studies reported significant associations with cancer type<sup>57</sup> and histologic type,<sup>37</sup> making associations indeterminate. While it was not indicated which cancer type was correlated with hopelessness,<sup>57</sup> patients with squamous cell carcinoma reported being more hopeless.<sup>37</sup>

### Psychosocial correlates

The psychosocial factors identified could be classified into the following themes: emotional distress, demoralisation and resignation, quality of life, adjustment and resilience, coping responses, uncertainty, control and self-efficacy, self-esteem, personality, as well as social support and connections.

The current review presented the strongest evidence for emotional distress as a psychological correlate of hope and hopelessness. All nine studies that examined emotional distress reported significant associations.<sup>15 35 38 40 43 49 53–55</sup> State hope was negatively associated with depression,<sup>49 54</sup> anxiety<sup>54</sup> and symptom distress.<sup>15 55</sup> Trait hope was associated with the trajectory of depression and anxiety; patients who had significant decrease in distress over time were more likely to demonstrate higher trait hope than those who showed maintenance of high distress over time.<sup>35</sup> Hopelessness was positively correlated to depression<sup>40 43</sup> and anxiety.<sup>53</sup> History of depression also significantly predicted hopelessness at 3 months follow-up.<sup>38</sup> Emotional distress in caregivers was examined in one study; depression and hopelessness in caregivers were correlated with hopelessness in patients.<sup>53</sup>

The review also presented strong evidence for the following variables: social support and connections, quality of life, control or self-efficacy, as well as adjustment and resilience.

Social support or connections was examined in 10 studies. Seven of these studies indicated state and trait hope to be positively associated with social support,<sup>35 41 46 48 49 52 62</sup> specifically support from family,<sup>41 49 62</sup> spouses<sup>48</sup> and friends.<sup>41</sup> However, support from medical professionals was not a significant factor.<sup>41</sup> Four studies examined social connections;<sup>35 38 42 62</sup> state and trait hope was positively correlated to relationships with neighbours and family,<sup>42</sup> social relational quality<sup>35</sup> and satisfaction with nursing care,<sup>62</sup> while hopelessness was associated with poor satisfaction with confidants.<sup>38</sup>

Significant correlations between hope or hopelessness and quality of life were reported in all five studies that examined this association; hope was associated with better quality of life<sup>42 48</sup> and spiritual well-being,<sup>63</sup> while hopelessness was associated with poorer quality of life<sup>43</sup> and spiritual well-being.<sup>47</sup>

All five studies that examined control or self-efficacy reported significant associations.<sup>54 55 58 60 65</sup> Hope was significantly correlated with higher perception of control,<sup>55</sup> higher internal locus of control, lower chance health locus of control<sup>58 60</sup> and generalised self-efficacy.<sup>54</sup> Hopelessness was negatively correlated with self-efficacy in emotional regulation, managing physical symptoms and aspects of daily living.<sup>65</sup>

All four studies that examined adjustment and resilience reported significant associations; these indicated hope with psychosocial adjustment,<sup>44</sup> resilience<sup>48</sup> and post-traumatic growth,<sup>39</sup> and hopelessness with poorer life adjustment ability.<sup>50</sup>

Uncertainty, demoralisation and resignation, as well as self-esteem, were examined in a small number of studies, with significant associations reported in all studies. In the three studies that examined uncertainty, hope was negatively associated with uncertainty,<sup>41 42 51</sup> such as in areas of symptoms, diagnosis, treatment and prognosis.<sup>51</sup> Demoralisation and resignation were examined in three

studies;<sup>45 57 64</sup> higher hopelessness was significantly associated with increased likelihood of demoralisation,<sup>57</sup> resignation<sup>45</sup> and desire for hastened death.<sup>64</sup> In the two studies that examined self-esteem, hope was significantly associated with higher self-esteem.<sup>42 49</sup>

There was some evidence for coping responses and personality traits as correlates of hope and hopelessness. However, as different studies focused on different types of coping responses and traits, the results were inconclusive. Coping responses were examined in four studies.<sup>15 42 45 46</sup> While hope was significantly correlated to problem solving<sup>42</sup> and coping that was optimistic, confrontative and self-reliant,<sup>46</sup> it was negatively associated with catastrophic thinking,<sup>15</sup> as well as fatalistic and emotional coping.<sup>46</sup> Hopelessness was negatively associated with a positive attitude towards cancer.<sup>45</sup> Four studies examined personality traits: hope was significantly correlated to optimism,<sup>35 39 54</sup> while hopelessness was linked to higher neuroticism and lower extraversion.<sup>38</sup>

## DISCUSSION

Overall, the literature on hope in Asian patients with cancer is still largely observational, and mostly restricted to the East Asia region (China, Hong Kong, Taiwan, Japan and Korea).

A majority of the studies in the current review used the HHI to measure hope or the 'helplessness/hopelessness' subscale of the MAC and Mini-MAC to measure hopelessness. The use of a variety of scales in the rest of the studies suggests that there is still room for standardising the measurement of hope and hopelessness to strengthen the evaluation of evidence across studies.<sup>12</sup> The heterogeneity of measurements does, however, offer a greater understanding of hope as some scales measure trait hope, while others measure state hope. As there were only a few studies that include trait measurements, it is not yet possible to make any conclusive evaluations on the differences in association between trait and state hope (and hopelessness) in this review.

The current review extends knowledge from previous reviews by highlighting other associated sociodemographic variables, such as education level and employment. These variables were not highlighted in the previous reviews,<sup>4 12 16</sup> but were consistently supported in the current review, and could thus be unique to the Asian cancer populations. The current review further supports the findings of previous reviews<sup>4 12 16</sup> that hope is associated with socioeconomic status as well as positive clinical and psychosocial outcomes, while lower hope (and higher hopelessness) is associated with depression, anxiety, fatigue and demoralisation.

Furthermore, in the current review, cancer stage was significantly associated with hope and hopelessness in 8 of 11 studies. Out of these, five studies examined hopelessness. This was in contrast with the earlier reviews by Chi<sup>16</sup> and Butt,<sup>12</sup> which only included studies on hope, and suggested that hope was not significantly related to

cancer stage. If studies measuring hopelessness were excluded, the evidence of the relationship between stage of cancer and hope would be diminished, thus emphasising the advantage of examining hope and hopelessness.

The current review of cancer populations in Asian countries showed that there was an association between hope (and hopelessness) and pain intensity and interference.<sup>37 51 59 65</sup> In contrast, the review by Chi,<sup>16</sup> which was mostly on Western populations, revealed no significant associations with pain. Hope could be influenced by cultural and religious beliefs, such as beliefs in an afterlife, which might not be captured by existing measurement tools.<sup>59</sup> Likewise, attitudes towards pain and pain expressions could also be affected by cultural beliefs.<sup>72</sup> Though inconclusive, these inconsistencies suggest that the relationship with cancer stage and pain may be nuanced by cultural differences; as such, it is necessary to validate the theoretical understanding of hope in a population before translating this into an intervention. As hope research is not as well developed in the Asian region, more work needs to be done to understand the conceptualisation and measurement of hope in the Asian setting.

The present review also presented inconsistent evidence regarding awareness of cancer diagnosis, with awareness of diagnosis associated with increased levels of hope in two studies,<sup>58 60</sup> but higher levels of hopelessness in one study.<sup>53</sup> Qualitative studies examining awareness of diagnosis also produced mixed findings. Being told the truth was related to hope for some patients in one study as it alleviated their anxiety regarding their illness,<sup>73</sup> but patients from another study highlighted that awareness of disease dampened hope and future outlook.<sup>74</sup> The issue of disclosure of cancer diagnosis had been an ongoing debate in the Asian setting.<sup>75 76</sup> Asian family members often did not want to disclose cancer diagnoses to patients to protect them from distress,<sup>53 58 75</sup> but patients themselves often expressed a desire to know the truth.<sup>77 78</sup> With such conflicting results, it would thus be important to further examine whether awareness of diagnosis contributes to hope or hopelessness in Asian countries, in order to help physicians in discussing the cancer diagnoses and prognoses with patients.

### Limitations

Some potentially relevant articles, which were mainly published in journals from Asian countries, were not included as the full text was unobtainable, despite repeated attempts at contacting libraries and authors. Furthermore, the nature of the search limited selected articles to those with at least English titles. These could potentially exclude studies that would provide greater insight to hope in the Asian context.

Furthermore, it is important to note the diversity within Asia region. While this review focused only on East, South and Southeast Asia countries for cultural homogeneity, this region already comprises various

ethnic groups with diverse cultures and beliefs, which might influence the associations between hope and other factors. Furthermore, as a majority of the included studies were conducted in the East Asia region, this current review might be limited in generalising its findings to the entire Asia region.

Directionality of observed associations cannot be ascertained as the majority of studies were cross-sectional. Only four longitudinal studies were identified but temporal changes across the various parameters and hope or hopelessness had not been explored.

Another limitation of this study is the heterogeneity of the patient populations studied (in terms of age and cancer types), and heterogeneity in factors assessed and the instruments used to assess hope and hopelessness across the studies. Such heterogeneity prevented direct comparisons of the results across studies, limiting the conclusiveness of the review.

### Future directions

The findings suggest several directions for future research. First, there is still considerably little research on correlates of hope and hopelessness in patients with cancer being conducted in South and Southeast Asia when compared to East Asia. Conducting more cross-cultural studies could provide a better understanding of the variations in the relationship between hope and other related factors, allowing translation into more culturally sensitive psychosocial interventions to enhance coping with the cancer illness.

The inclusion of hopelessness in the current review demonstrated the advantages of examining hope and its antithetical concept—hopelessness, which could be recommended for future reviews in order to gain a comprehensive understanding of hope.

In addition, a greater focus on longitudinal studies would enable an assessment of changes in hope and hopelessness and their related factors over time and disease progression.

Overall the associations between hope and each of the factors highlighted above were supported by a majority of the studies that examined these factors. However, these associations exhibit small to moderate effect sizes, and conclusions within each individual study could be influenced by hidden confounders. Future studies should thus seek to examine the factors in a single study, or a meta-analysis could be conducted to examine the interplay of the different biopsychosocial factors in association with hope and hopelessness.

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**Acknowledgements** The authors would like to thank Ms Serene Ang and Mr Gerrard Lai for their assistance rendered in this study.

**Contributors** RM conceptualised the project and reviewed the articles. SMC and IJY conducted the data abstraction, review of articles and analysis. SMC, HAL and JYST prepared the manuscript. EHK and KG were involved in the review of the manuscript. All authors read and approved the final manuscript.

**Funding** This research was supported by the National University of Singapore Start-Up Grant to RM (grant numbers R-177-000-039-133 and R-177-000-039-733).

**Disclaimer** The study sponsor had no role in study design, data extraction and analyses, manuscript preparation or the decision to submit the manuscript for publication.

**Competing interests** None declared.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data sharing statement** No additional data are available.

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