

ORIGINAL ARTICLE

Perceived Social Support is Independently Associated with Adaptive Coping Among Women After Mastectomy: A Community-Based Cross-Sectional Study in Banjarmasin

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ABSTRACT

Background: Mastectomy resolves a surgical problem but leaves a psychospiritual one, and the cancer survivor organisations supporting women after that surgery in Banjarmasin, South Kalimantan have no local evidence on which resource to strengthen first.

Objective: To quantify the association of spiritual well-being and perceived social support with coping among women after mastectomy, to test whether coping differs by cancer stage or by time since surgery, and to identify which factor shows the stronger independent association once the other is held constant.

Methods: This community-based analytical cross-sectional study assessed members of Yayasan Kanker Indonesia Banjarmasin and the Cancer Information and Support Center South Kalimantan (total sampling; n = 101, 81.5% of 124 enumerated members) at home with the FACIT-Sp-12, Brief COPE and MSPSS. Analysis used Spearman correlation with Bonett-Wright intervals, exact contingency tests, rank-based effect sizes and binary logistic regression with E-value sensitivity analysis.

Results: Adaptive coping was present in 69.3% (95% CI 59.7-77.5). Coping correlated with spiritual well-being ($\rho = 0.478$, 95% CI 0.302-0.623) and with perceived social support ($\rho = 0.569$, 95% CI 0.408-0.696), both $p < 0.001$. Coping did not differ by cancer stage ($p = 0.057$, $r = 0.189$) or time since mastectomy ($p = 0.101$, $\epsilon^2 = 0.046$). Adjusted, perceived social support was independently associated with adaptive coping (aOR = 4.63, 95% CI 1.67-12.80, $p = 0.003$) whereas spiritual well-being was not (aOR = 1.92, 95% CI 0.88-4.19, $p = 0.099$); the difference BETWEEN the coefficients was itself not significant (ratio of odds ratios 2.41, 95% CI 0.67-8.66, $p = 0.179$), so social support is independently associated with coping but is not established as the stronger resource.

Conclusion: Strengthening perceived support through a survivor peer-educator cadre and family-inclusive counselling is the priority these data support for evaluation; spiritual care should not be displaced.

HIGHLIGHTS

- Total sampling reached 101 of 124 women after mastectomy in two Banjarmasin NGOs.
- Adaptive coping was present in 69.3% of women (95% CI 59.7–77.5).
- Only perceived social support survived adjustment (aOR 4.63, 95% CI 1.67–12.80).
- The two resources did not differ on a direct test ($p = 0.179$).
- A survivor peer-educator cadre is the component these data support for evaluation.

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1. Introduction

Breast cancer is the most frequently diagnosed malignancy among women worldwide, with more than two million new cases each year, and registry projections indicate that the absolute burden will continue to rise for decades^{1–3}. That burden is not evenly distributed: incidence and outcome track socioeconomic development, and the households least able to absorb the cost of treatment carry the steepest financial consequences^{4,5}. Indonesia carries a disproportionate

share because disease is detected late — limited screening reach, delayed presentation and delayed referral mean that a majority of Indonesian women reach the operating theatre with locally advanced disease, for which mastectomy remains the standard surgical response^{6–8}. South Kalimantan sits among the higher-prevalence provinces of the country, and mastectomy volumes at the provincial referral hospital in Banjarmasin have risen steeply across successive years, so the population of women living after breast removal in this city is both large and growing⁶. The clinical problem is therefore no longer only how to

remove the tumour, but how the community absorbs the women who return from that operation.

What those women return with is not primarily a surgical deficit. Loss of a breast reorganises body image, marital and domestic roles, and the sense of a predictable future, and the resulting distress persists well beyond the completion of oncological treatment^{9–11}. Anxiety and depression remain prevalent in long-term survivors years after active treatment ends, and they travel with impaired health-related quality of life and disturbed sleep rather than resolving quietly^{12–14}. How a woman copes — whether she engages the problem, regulates the emotion, or avoids the situation — is the proximal behavioural pathway through which these outcomes are shaped, and coping style predicts posttraumatic growth across breast cancer populations^{15–17}.

Two resources are repeatedly nominated as the raw material of adaptive coping. The first is internal: spiritual well-being, the capacity to find meaning, hold inner peace and draw on faith, measured in oncology by the FACIT-Sp-12 and associated in multiple settings with lower distress and better quality of life^{18–20}. The second is external: perceived social support from family, friends and a significant other, which mediates the relationship between illness burden and psychological outcome in breast cancer cohorts^{21–23}. That association has been confirmed meta-analytically in breast cancer and replicated in other cancer populations, and self-efficacy and hope have been shown to carry part of the path from coping to resilience^{24–26}. Three frameworks organise these resources. Anderson and McFarlane's Community-as-Partner model positions a community core and its resource subsystems as the object of nursing assessment; Watson's Theory of Human Caring frames the transpersonal relationship through which those resources are strengthened; and the Lazarus and Folkman transactional model supplies the appraisal mechanism that converts a held resource into a coping act. Each is cited here to a recent application in nursing rather than to its originating monograph^{27–29}; readers are referred to the original statements of all three for the theories themselves. The way the three fit together, and the point at which each of the measured variables enters, is set out in Figure 1. Empirical work in breast cancer populations is consistent with all three^{30,31}.

The evidence base nevertheless leaves a decision-relevant gap. Spiritual and social resources are almost always studied one at a time, so their relative contribution is unknown; studies that report both rarely place them in a single adjusted model^{18,32,33}. Comparable survivorship cohorts elsewhere in Asia report the same pattern of unresolved psychosocial need after treatment, and structural work shows stigma and disclosure acting on quality of life through social support rather than around it^{34,35}. Indonesian work on spirituality in breast cancer is predominantly descriptive or qualitative and hospital-recruited, and none of it is set in Kalimantan^{36–38}. This matters practically. A community organisation with one nurse and a fixed budget cannot deliver

spiritual counselling, family therapy and peer education simultaneously; it needs to know which resource shows the strongest association with coping. Prior community programmes for cancer survivors in Indonesia have been assembled from plausible components rather than from a local measurement of which component carries the largest effect.

The Master's Programme in Nursing at Universitas Muhammadiyah Banjarmasin therefore conducted this study inside the two organisations that actually accompany women after mastectomy in this city — Yayasan Kanker Indonesia (YKI) Banjarmasin and the Cancer Information and Support Center (CISC) South Kalimantan — rather than in a hospital clinic. Data were collected at participants' homes, in a community whose Banjar cultural setting gives religious practice an unusually prominent place in the experience of illness³⁶. The aim was to quantify the association of spiritual well-being and perceived social support with coping among women after mastectomy, to test whether coping differs by cancer stage or by time since surgery, and to identify which factor shows the stronger independent association once the other is held constant. The novelty is not that these constructs were measured again in a new place: it is that they were measured together, in an adjusted model, in a community sample recruited inside the two organisations that actually deliver survivor support in this province rather than in a hospital clinic, with the comparison between them tested directly rather than inferred from which coefficient happened to reach significance. Three hypotheses were specified. H1: spiritual well-being is positively associated with coping. H2: perceived social support is positively associated with coping. H3: the two associations differ in magnitude once each is adjusted for the other and for clinical stage and time since surgery. H3 is the comparative hypothesis on which the practical prioritisation question turns, and it is tested as a contrast between coefficients rather than by comparing their *p* values.

2. Methods

2.1. Design

This was an analytical cross-sectional study with a descriptive-correlational design, reported in accordance with the STROBE statement for observational research, following a recent worked application of that checklist³⁹. All variables were measured at a single occasion, with no follow-up assessment. The design was chosen because the study question concerns the relative standing of two co-existing resources within a defined community, which is a prevalence-and-association question rather than an efficacy question; no intervention was delivered or withheld; where the transactional model has been operationalised as an intervention elsewhere, appraisal itself was measured and manipulated, which this design does not do⁴⁰. The study is a community needs assessment intended to set programme priorities, not an evaluation of a programme, and every implication drawn in the Discussion is a hypothesis for evaluation rather than a demonstrated effect.

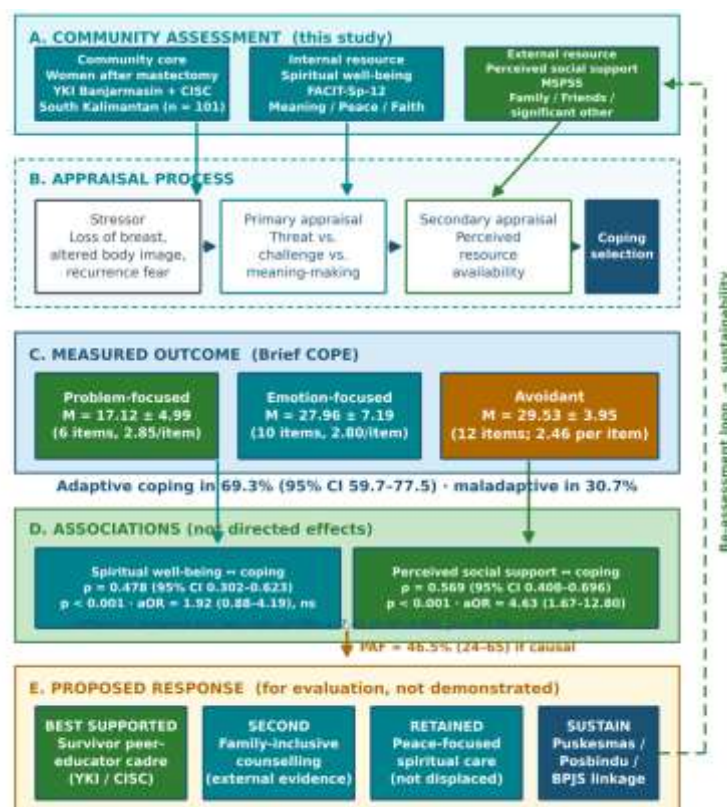


Figure 1. Community-as-Partner empowerment framework for psychospiritual adaptation after mastectomy, integrating Watson's Theory of Human Caring with the Lazarus and Folkman transactional model of stress and coping. Band A shows the constructs measured in this study; band B the appraisal mechanism proposed by the transactional model, none of whose variables was measured here and which is therefore an interpretive rather than a tested pathway; band C the measured coping outcome; band D the cross-sectional associations observed, drawn as undirected links because the design cannot establish direction; and band E the programme components proposed for evaluation, closed by a re-assessment loop.

Anticipated sources of bias were addressed as follows. Selection bias was limited by enumerating and approaching the entire source population rather than sampling from it, and by recording a reason for every non-inclusion. Information bias was limited by administering all instruments on paper in a fixed order, by restricting researcher input during completion to literal restatement of item wording, and by checking each questionnaire for completeness in the participant's presence. Confounding was addressed by entering the two resources together with the two clinical characteristics in a single model, and residual unmeasured confounding was quantified afterwards with an E-value. The biases these measures could not remove — a sampling frame restricted to organisationally connected women, self-report of all exposures and the outcome at one sitting, and a single unblinded data collector who was also the analyst — are stated in the limitations.

2.2. Ethical approval

This study received ethical approval from the Ethics Committee of Universitas Muhammadiyah Banjarmasin (UMB), Indonesia (Approval No. 123/UMB/KE/IV/2026). Written informed consent was obtained from all participants. The study was conducted in accordance with the Declaration of Helsinki. Approval preceded all participant contact: the study period stated

below begins with protocol development in November 2025, and enrolment began only after the approval date. Participation was voluntary, could be withdrawn at any point without consequence, and no personal identifiers were recorded on the instruments. Because the questionnaires touch on distressing material, data collection was paused whenever a participant became fatigued or emotionally affected, and participants were free to stop. A distress pathway was agreed with both organisations before fieldwork: any participant who became acutely distressed, or who scored in the maladaptive coping category and wished to be contacted, was referred to the psychosocial support coordinator of her own organisation for follow-up accompaniment, and onward to the surgical oncology clinic of the provincial referral hospital where clinical review was indicated.

2.3. Setting and participants

The study was conducted among women after mastectomy who are registered with, or accompanied by, YKI Banjarmasin and CISC South Kalimantan, in the city of Banjarmasin, South Kalimantan, between 23 November 2025 and 31 July 2026. These two organisations are the principal non-hospital providers of information, peer accompaniment and psychosocial support for cancer patients in the province. Inclusion criteria were: female, a diagnosis of breast cancer, mastectomy performed at least one month before

assessment, willingness to give written informed consent, and adequate communication ability. Exclusion criteria were severe cognitive impairment and severe pain at the time of assessment. Membership records identified 124 eligible-appearing women, each of whom was visited at home (door-to-door) for screening explanation and data collection; 101 women were enrolled and analysed (81.5% of the enumerated source population). Twenty-three women were not included: 12 declined to participate, 7 did not meet the eligibility criteria on screening, 3 had moved out of the city and 1 had died. The full participant flow, from the enumerated membership list through screening and consent to analysis, is shown in Figure 2, and the characteristics of the analysed sample are given in Table 1. District of residence was not recorded, so the sample cannot be described as lying strictly within the city boundary; both organisations draw members from Banjarmasin and its immediate surroundings.

2.4. Sample size and precision

Total sampling was applied: every member of the source population meeting the eligibility criteria was approached, so the achieved sample of 101 represents 81.5% of the enumerated source population and no probabilistic sampling frame was required. Where sample size is fixed by a census, an a priori power calculation is not meaningful and the minimum detectable effect is reported instead. For a two-sided correlation test at $\alpha = 0.05$, 101 participants detect $\rho \geq 0.276$ with 80% power and $\rho \geq 0.316$ with 90% power; detecting a conventionally moderate $\rho = 0.30$ at 80% power would have required 85 participants. Observed (post hoc) power is not reported anywhere in this manuscript, because it is a deterministic function of the p value and adds nothing to the confidence intervals given.

Precision for the primary analysis — the logistic model — is reported separately, because the correlation calculation does not cover it and because the two resource variables are not equally well powered. With the observed category distributions and an adaptive coping prevalence of 69.3%, the approximate minimum per-category odds ratio detectable at 80% power is 3.21 for perceived social support, whose categories are concentrated (2/32/67; category variance 0.269), and 2.29 for spiritual well-being, whose categories are more evenly spread (16/37/48; variance 0.533). This asymmetry is stated in advance because it bears directly on interpretation: a significant coefficient for one predictor alongside a non-significant coefficient for the other is not, on its own, evidence that the two differ.

With 31 maladaptive and 70 adaptive outcomes, a model estimating four predictors plus an intercept yields 7.75 events per predictor and 6.20 events per estimated parameter. Both exceed the minimum of five that is sometimes cited but fall short of the more widely applied convention of ten, and the sparse lowest stratum of the social support variable (2 women, both coping maladaptively) means the effective information behind that coefficient is thinner than the raw count suggests.

2.5. Measures

Spiritual well-being was measured with the Indonesian version of the Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being Scale (FACIT-Sp-12), a 12-item instrument scored 0–4 per item over a seven-day recall window, yielding a total of 0–48 across three four-item subscales — Meaning, Peace and Faith⁴¹. The Indonesian adaptation used in the source study reports a minimum item-total correlation of 0.50 and Cronbach's $\alpha = 0.768$; the three-factor structure of the instrument has been reconfirmed in recent cross-cultural validation work⁴². Totals were categorised a priori as low (0–24), moderate (25–36) and high (37–48); these bands were set for this study and are not norm-referenced, which is stated in the limitations.

Coping was measured with the Indonesian version of the Brief COPE, 28 items scored 1–4, total range 28–112, grouped into problem-focused, emotion-focused and avoidant coping⁴³. The Indonesian adaptation used here reported item validity of 0.447–0.640 and Cronbach's α of 0.909 in an Indonesian oncology sample. The three-factor allocation used here assigns 6 items to problem-focused, 10 to emotion-focused and 12 to avoidant coping, which reconciles both with the 28 items of the instrument and with its 28–112 total range (6+10+12 = 28; 24+40+48 = 112). Totals of 28–70 were classified as maladaptive and 71–112 as adaptive. This threshold is the scale midpoint; the Brief COPE has no externally validated total-score cut-point, and the consequences of that — together with the fact that a higher avoidant score raises the total — are addressed in the limitations. Validations of the instrument in other Asian oncology populations report comparable internal consistency⁴⁴.

Perceived social support was measured with the Indonesian version of the Multidimensional Scale of Perceived Social Support (MSPSS), 12 items across the Family, Friends and Significant Other subscales, total range 12–84, categorised as low (12–35), moderate (36–60) and high (61–84)⁴⁵. Reported subscale reliabilities in the Indonesian adaptation were $\alpha = 0.91$ (significant other), 0.87 (family) and 0.85 (friends), and the Indonesian version has since been re-examined by Rasch analysis with satisfactory fit⁴⁶. The MSPSS bands correspond to the conventional mean-item bands of ≤ 2.9 , 3.0–5.0 and ≥ 5.1 respectively.

The score ranges, subscale structure, category boundaries and distributional testing for all three instruments are summarised together in Table 2, which should be read alongside this section. Reliability coefficients quoted above are those reported for the Indonesian adaptations of each instrument; internal consistency was not recomputed in the present sample, which is stated as a limitation because one interpretation offered in the Discussion turns on the relative measurement precision of the three scales.

Breast cancer stage (early I–II versus advanced III–IV) and time since mastectomy (early adaptation 1–3 months, stabilisation 4–6 months, long-term adjustment >6 months) were recorded on a participant characteristics sheet as self-reported data, together with

age, education, occupation and monthly household income. All instruments were administered on paper and self-completed in the participant's home, with the researcher available to clarify item wording without directing the answer; every returned questionnaire was checked for completeness before the participant was left, and no missing data remained at analysis. Because 15.8% of participants had completed primary schooling only and 14.9% junior secondary schooling, items were read aloud verbatim on request, and the consent form was likewise read aloud where a participant preferred; the response was recorded by the participant herself in every case.

2.6. Statistical analysis

Analyses were performed in IBM SPSS Statistics version 26 and independently recomputed from the reported summary statistics in a Python 3 script (SciPy 1.17, NumPy 2.4), which is provided with the manuscript. Categorical variables are reported as frequencies with Wilson 95% confidence intervals, which behave correctly at the proportions near 0 and 1 present in this sample; continuous variables as mean $\pm$ standard deviation with a t-based 95% confidence interval for the mean. Distributional form was examined with the Kolmogorov-Smirnov statistic under the Lilliefors correction, since the distribution parameters were estimated from the sample; this bears on the choice of bivariate test only, not on the logistic regression, which makes no distributional assumption about its predictors.

Associations between spiritual well-being, perceived social support and coping were quantified with the Spearman rank correlation between the raw instrument total scores. Confidence intervals use the Bonett-Wright standard error $\sqrt{((1 + \rho^2/2)/(n - 3))}$ rather than the Pearson Fisher-z error, which understates the variance of a rank coefficient; shared rank variance is reported as ρ^2 , which is variance shared between ranks and not between scores. The categorical resource-by-coping cross-tabulations were tested with the Pearson χ^2 statistic, with Cramér's V and its 95% interval obtained by inverting the non-central χ^2 distribution, and with a linear-by-linear association test for ordered trend. Because the FACIT-Sp-12 bands are of unequal width, the trend test was repeated using band midpoints as a sensitivity analysis; the MSPSS bands are equally spaced, so for that instrument the midpoint-scored statistic is an affine transform of the equal-spacing one and is necessarily identical, and is reported for completeness only.

Cochran's condition was assessed separately for each table rather than globally. In the spiritual well-being table one of six cells has an expected count below five (4.91) and none below one, so the condition is met and the asymptotic χ^2 is adequate. In the social support table two of six cells fall below five and one below one (0.61), so the condition is violated and the Fisher-Freeman-Halton exact test is the primary inference for that table. Stratum-specific odds ratios involving the zero cell were estimated with the Haldane-Anscombe correction and are reported only for completeness.

Differences in coping by cancer stage were tested with the Mann-Whitney U test, reporting U, the standardised Z, the rank-biserial correlation and $r = |Z|/\sqrt{N}$, each with a 95% interval; differences by time since mastectomy with the Kruskal-Wallis H test, reporting H, degrees of freedom and epsilon-squared with its interval. Factors independently associated with adaptive coping were identified by binary logistic regression entering spiritual well-being, perceived social support, cancer stage and time since mastectomy simultaneously. The two resource variables and time since mastectomy were entered as ordinal terms coded 1, 2, 3 in ascending order and cancer stage as a binary term coded 0 for early and 1 for advanced, so each odds ratio expresses the change in odds per one-category increase relative to the adjacent lower level. These four variables were selected a priori as the study's two exposures of interest plus the two clinical characteristics named in the research question; no data-driven variable selection was performed. Adjusted odds ratios are reported with Wald 95% confidence intervals and the model with Nagelkerke R^2 , a likelihood-based pseudo- R^2 that rescales the likelihood ratio and is not a proportion of variance explained.

Because the study's practical question is comparative, the difference between the two resource coefficients was tested directly rather than inferred from their separate significance. The contrast B(social support) – B(spiritual well-being) was evaluated against the standard error $\sqrt{(SE_1^2 + SE_2^2)}$ and expressed as a ratio of odds ratios. This assumes zero covariance between the two estimates, which is the assumption most favourable to finding a difference; positively correlated predictors yield negatively covarying coefficients, a larger standard error and a larger p value, so the reported test is an upper bound on the evidence for a difference.

Three further quantities translate the findings into programme terms, and each is reported with an interval and with its assumptions stated. The population attributable fraction estimates the proportion of maladaptive coping statistically attributable to social support below the high category, with the corresponding risk difference and number needed to expose; because Levin's formula presupposes no confounding — precisely what the adjusted model denies — the Miettinen form using the adjusted estimate is reported alongside it, and both are conditional on a causal interpretation the design cannot establish⁴⁷. The E-value quantifies how strong an unmeasured confounder would have to be, on the risk-ratio scale, to explain away the adjusted association, and is interpreted against the strength of a measured comparator rather than in isolation⁴⁸. All three quantities, together with the precision the study achieved, are collected with their assumptions in Table 6 so that a reader can see at a glance which numbers are descriptive and which are conditional on a causal reading. Significance was set at $\alpha = 0.05$, two-tailed, and exact p values are reported to three decimal places. 18 hypothesis tests are reported in total. The three prespecified hypotheses carry the

primary inference; the remainder are exploratory. Because the practical recommendation rests on a single coefficient, that coefficient is also reported with a Holm-adjusted *p* value across all 18 tests.

3. Results

3.1. Participant characteristics

All 101 enrolled women completed every instrument, so all analyses are complete-case with no imputation, as Figure 2 shows. Mean age was 51.20 ± 7.63 years, with 52.5% in the 46–55 year band. Senior secondary education was the most common attainment (40.6%), just over half were homemakers (51.5%), and 43.6% reported a monthly household income of IDR 1,500,000–2,999,999. Advanced disease predominated: 55 women (54.5%, 95% CI 44.8–63.8) had stage III–IV breast cancer. 43.6% were more than six months past surgery. The complete demographic and clinical profile, with a Wilson interval on every proportion, is given in Table 1.

Resource levels were high. Spiritual well-being totalled 34.97 ± 8.96 of a possible 48 (95% CI 33.20–36.74), with Faith the strongest subscale (12.01 ± 3.27 , 75.1% of the attainable range) and Peace the weakest (11.32 ± 3.34 , 70.8%). Perceived social support totalled 65.36 ± 12.84 on a 12–84 scale, highest for Family (21.99 ± 4.52) and lowest for Friends (21.47 ± 4.90). Coping totalled 74.61 ± 10.01 on a 28–112 scale. Within coping, the avoidant

subscale carried the highest raw mean (29.53 ± 3.95) and the problem-focused subscale the lowest (17.12 ± 4.99). That ranking is an artefact of subscale length and reverses once corrected. The three subscales contain 6, 10 and 12 items respectively, so per item the ordering is problem-focused 2.85, emotion-focused 2.80 and avoidant 2.46 — that is, problem-focused strategies were used most intensively per item and avoidant strategies least, the opposite of what the raw subscale totals suggest. Every instrument score in this paragraph, with its possible range, its confidence interval and its distributional test, is tabulated in Table 2, and the same profile is shown graphically in Figure 3, in which panel A places the FACIT-Sp-12 and MSPSS subscales on a common percentage-of-maximum scale, panel B contrasts the raw and per-item Brief COPE orderings that Table 2 reports side by side, and panel C shows the category distribution.

Categorically, 70 women (69.3%, 95% CI 59.7–77.5) met the criterion for adaptive coping and 31 (30.7%, 95% CI 22.5–40.3) for maladaptive coping. Spiritual well-being was high in 47.5%, moderate in 36.6% and low in 15.8%; perceived social support was high in 66.3%, moderate in 31.7% and low in only 2.0% (2 women). These category distributions are the lower block of Table 2 and are drawn as stacked proportions in Figure 3C; the near-empty low-support stratum visible there is the sparsity that constrains several later analyses.

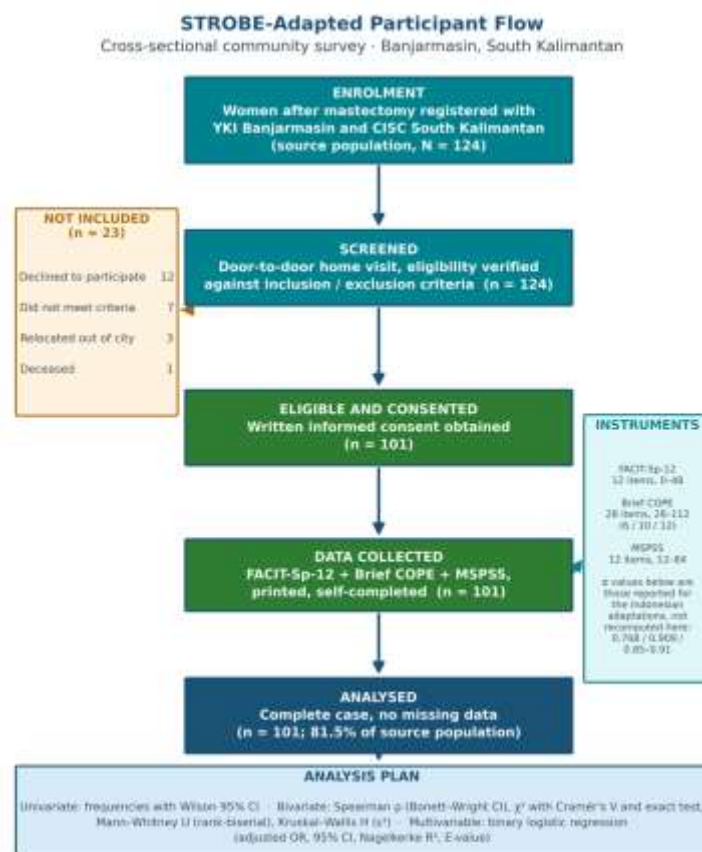


Figure 2. STROBE-adapted participant flow. All 124 women identified from the membership records of Yayasan Kanker Indonesia Banjarmasin and the Cancer Information and Support Center South Kalimantan were visited at home; 101 were enrolled, completed all three instruments with no missing data, and were analysed.

Table 1. Demographic and clinical characteristics of women after mastectomy accompanied by YKI Banjarmasin and CISC South Kalimantan (n = 101).

Characteristic	n (%)	95% CI for %	Note
Age (years) — mean ± SD 51.20 ± 7.63			
36-45 years	21 (20.8)	14.0-29.7	
46-55 years	53 (52.5)	42.8-61.9	
56-65 years	24 (23.8)	16.5-32.9	
>65 years	3 (3.0)	1.0-8.4	
Educational attainment			
Primary school	16 (15.8)	10.0-24.2	
Junior high school	15 (14.9)	9.2-23.1	
Senior high school	41 (40.6)	31.5-50.3	
Diploma/Bachelor	29 (28.7)	20.8-38.2	
Occupation			
Homemaker	52 (51.5)	41.9-61.0	
Farmer/labourer	11 (10.9)	6.2-18.5	
Self-employed	16 (15.8)	10.0-24.2	
Salaried employee	14 (13.9)	8.4-21.9	
Retired	8 (7.9)	4.1-14.9	
Monthly household income (IDR)			
< IDR 1,500,000	5 (5.0)	2.1-11.1	
IDR 1,500,000-2,999,999	44 (43.6)	34.3-53.3	
IDR 3,000,000-4,499,999	37 (36.6)	27.9-46.4	
>= IDR 4,500,000	15 (14.9)	9.2-23.1	
Breast cancer stage (self-reported)			
Early (I-II)	46 (45.5)	36.2-55.2	
Advanced (III-IV)	55 (54.5)	44.8-63.8	Advanced disease predominant
Time since mastectomy			
Early adaptation (1-3 mo)	29 (28.7)	20.8-38.2	
Stabilisation (4-6 mo)	28 (27.7)	19.9-37.1	
Long-term adjustment (>6 mo)	44 (43.6)	34.3-53.3	Largest group

SD, standard deviation; CI, confidence interval, computed by the Wilson method; IDR, Indonesian rupiah. Percentages are of n = 101; block totals may differ from 100.0 by up to 0.1 through rounding. Stage and time since mastectomy were self-reported on a participant characteristics sheet and were not verified against medical records.

Table 2. Psychospiritual resource and coping profile: instrument scores, subscale structure, distributional testing and category distribution (n = 101).

Instrument / category	Mean ± SD or n (%)	Possible range	95% CI	Kolmogorov-Smirnov	Interpretation
Spiritual well-being (FACIT-Sp-12)					
Meaning subscale	11.64 ± 3.16	0-16			72.8% of attainable range
Peace subscale	11.32 ± 3.34	0-16			70.8% of attainable range
Faith subscale	12.01 ± 3.27	0-16			75.1% of attainable range
Total score	34.97 ± 8.96	0-48	33.20-36.74	D = 0.135, p <0.001	72.9% of attainable range
Low (0-24)	16 (15.8)		10.0-24.2		
Moderate (25-36)	37 (36.6)		27.9-46.4		

Instrument / category	Mean ± SD or n (%)	Possible range	95% CI	Kolmogorov-Smirnov	Interpretation
High (37-48)	48 (47.5)		38.1-57.2		
Coping (Brief COPE)					
Problem-focused subscale	17.12 ± 4.99	6-24			2.85 per item (6 items); 61.8% of attainable range
Emotion-focused subscale	27.96 ± 7.19	10-40			2.80 per item (10 items); 59.9% of attainable range
Avoidant subscale	29.53 ± 3.95	12-48			2.46 per item (12 items); 48.7% of attainable range
Total score	74.61 ± 10.01	28-112	72.63-76.59	D = 0.096, p = 0.022	55.5% of attainable range
Maladaptive (28-70)	31 (30.7)		22.5-40.3		
Adaptive (71-112)	70 (69.3)		59.7-77.5		
Perceived social support (MSPSS)					
Family subscale	21.99 ± 4.52	4-28			75.0% of attainable range
Friends subscale	21.47 ± 4.90	4-28			72.8% of attainable range
Significant other subscale	21.90 ± 4.73	4-28			74.6% of attainable range
Total score	65.36 ± 12.84	12-84	62.83-67.89	D = 0.086, p = 0.064	74.1% of attainable range
Low (12-35)	2 (2.0)		0.5-6.9		
Moderate (36-60)	32 (31.7)		23.4-41.3		
High (61-84)	67 (66.3)		56.7-74.8		

FACIT-Sp-12, Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being Scale; MSPSS, Multidimensional Scale of Perceived Social Support; CI, confidence interval (t-based for means, Wilson for proportions). The Kolmogorov-Smirnov statistic is reported under the Lilliefors correction because the distribution parameters were estimated from the sample. Per-item means are given for the Brief COPE because its three subscales contain 6, 10 and 12 items respectively, so raw subscale totals are not comparable; the allocation reconciles with both the 28 items of the instrument and its 28-112 total range. Possible ranges carry the instrument floor rather than zero (FACIT-Sp-12 items score 0-4, Brief COPE 1-4, MSPSS 1-7), and percentages are of the attainable range, $100 \times (\text{mean} - \text{minimum}) / (\text{maximum} - \text{minimum})$. Reliability coefficients are those reported for the Indonesia adaptations and were not recomputed in this sample.

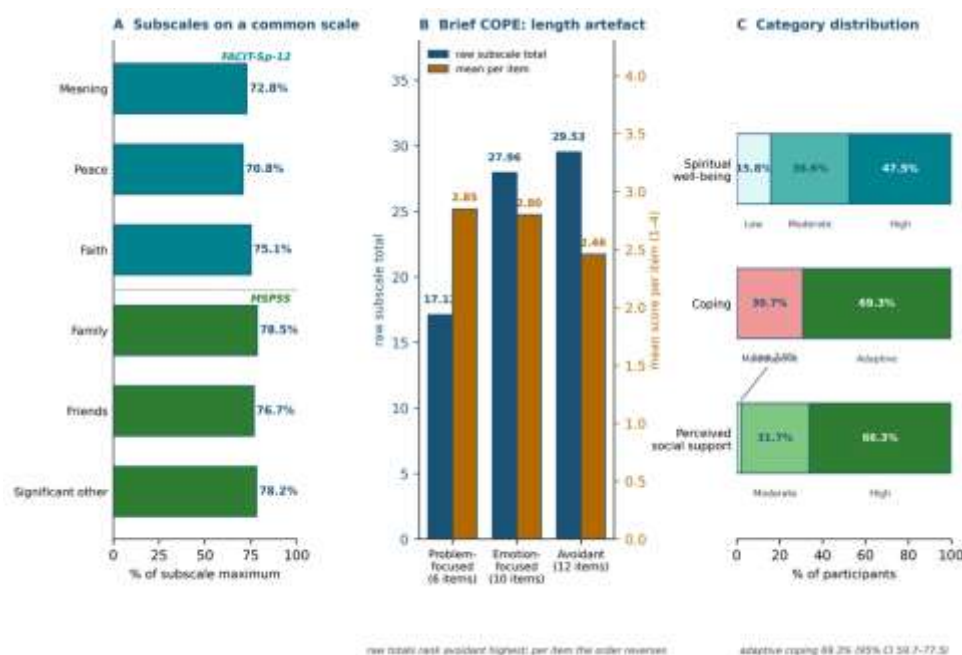


Figure 3. Instrument profile. (A) FACIT-Sp-12 and MSPSS subscales expressed as a percentage of each subscale maximum, so subscales of equal length are directly comparable; Faith is the highest spiritual subscale and Peace the lowest, while Family is the highest support subscale. (B) Brief COPE subscales as raw totals and as means per item; the raw totals appear to place avoidant coping highest, but that is an artefact of that subscale containing 12 items against 6 and 10, and the per-item ordering reverses. (C) Distribution across categories for all three instruments with Wilson 95% confidence intervals.

3.2. Distributional testing

Kolmogorov-Smirnov testing indicated departure from normality for the FACIT-Sp-12 total ($D = 0.135$, $df = 101$, $p < 0.001$) and the Brief COPE total ($D = 0.096$, $df = 101$, $p = 0.022$), whereas the MSPSS total was consistent with normality ($D = 0.086$, $df = 101$, $p = 0.064$). Rank-based methods were therefore used throughout the bivariate analysis, since coping — the dependent variable in every bivariate comparison — was non-normally distributed. These three statistics are reported in the 'Kolmogorov-Smirnov' column of Table 2 beside the score to which each belongs.

3.3. Spiritual well-being, social support and coping

Both resources correlated positively with the total coping score. For spiritual well-being, $\rho = 0.478$ (Bonett-Wright 95% CI 0.302-0.623; $t = 5.415$, $df = 99$, $p < 0.001$), corresponding to 22.8% shared rank variance. For perceived social support, $\rho = 0.569$ (95% CI 0.408-0.696; $t = 6.885$, $df = 99$, $p < 0.001$), corresponding to 32.4% shared rank variance. The two intervals overlap across 0.408-0.623, so the bivariate difference between the coefficients is not established; this overlap is drawn as the shaded band in Figure 4B, and both coefficients appear in the lower rows of Table 3.

Across ordered categories of spiritual well-being, the proportion coping adaptively rose from 37.5% (95% CI 18.5-61.4) in the low category to 59.5% in the moderate category and 87.5% (95% CI 75.3-94.1) in the high category ($\chi^2 = 16.765$, $df = 2$, $p < 0.001$; exact $p < 0.001$; Cramér's $V = 0.407$, 95% CI 0.195-0.592; trend $\chi^2 = 16.509$, $p < 0.001$, and 15.864 when band midpoints are used instead of equal spacing). The corresponding gradient for perceived social support ran from 0.0% (0 of 2) through 43.8% to 83.6% (95% CI 72.9-90.6) ($\chi^2 = 20.760$, $df = 2$, $p < 0.001$; exact $p < 0.001$; $V = 0.453$, 95% CI 0.243-0.639; trend $\chi^2 = 20.543$, $p < 0.001$). The two Cramér's V intervals overlap across 0.243-0.592 and therefore do not separate the two resources either. Both cross-tabulations, together with the χ^2 , exact, trend and correlation statistics quoted in this paragraph, are set out in full in Table 3, and the two gradients are plotted with their Wilson intervals in Figure 4A.

Because the lowest social support stratum contains only 2 women, the stratum-specific odds ratio for that row (24.57, 95% CI 1.10-546.31) is reported for completeness only; it rests on a Haldane-Anscombe correction to a zero cell, its interval spans more than two orders of magnitude, and no inference is drawn from it; it is the row marked with a superscript a in Table 3.

Table 3. Association of spiritual well-being and perceived social support with coping category, with ordered-trend testing and rank correlation ($n = 101$).

Category / statistic	Maladaptive n (%)	Adaptive n (%)	95% CI adaptive	Total n (%)	OR, highest category vs this row (95% CI)
Spiritual well-being category					
Low (0-24)	10 (62.5)	6 (37.5)	18.5-61.4	16 (100.0)	11.67 (3.10-43.90)
Moderate (25-36)	15 (40.5)	22 (59.5)	43.5-73.7	37 (100.0)	4.77 (1.62-14.03)
High (37-48)	6 (12.5)	42 (87.5)	75.3-94.1	48 (100.0)	reference
Pearson χ^2	16.765	$df = 2$	$p < 0.001$	exact $p < 0.001$	min expected 4.91
Cramér's V	0.407	95% CI 0.195-0.592	bias-corrected 0.384		
Linear-by-linear trend	$M^2 = 16.509$	$df = 1$	$p < 0.001$	midpoint scores $M^2 = 15.864$	
Spearman ρ with total coping score	0.478	95% CI 0.302-0.623	$t = 5.415$, $df = 99$	$p < 0.001$	$\rho^2 = 22.8\%$
Perceived social support category					
Low (12-35)	2 (100.0)	0 (0.0)	0.0-65.8	2 (100.0)	24.57 (1.10-546.31) ^a
Moderate (36-60)	18 (56.2)	14 (43.8)	28.2-60.7	32 (100.0)	6.54 (2.53-16.95)
High (61-84)	11 (16.4)	56 (83.6)	72.9-90.6	67 (100.0)	reference
Pearson χ^2	20.760	$df = 2$	$p < 0.001$	exact $p < 0.001$	min expected 0.61
Cramér's V	0.453	95% CI 0.243-0.639	bias-corrected 0.433		
Linear-by-linear trend	$M^2 = 20.543$	$df = 1$	$p < 0.001$	midpoint scores $M^2 = 20.543$	
Spearman ρ with total coping score	0.569	95% CI 0.408-0.696	$t = 6.885$, $df = 99$	$p < 0.001$	$\rho^2 = 32.4\%$

OR, odds ratio for adaptive coping in the HIGHEST category of the variable relative to the category named in that row, so values above 1 indicate that the highest category fares better; CI, confidence interval — Wilson for proportions, Bonett-Wright for ρ and non-central χ^2 inversion for Cramér's V ; ρ^2 is shared RANK variance, not shared score variance. ^a Haldane-Anscombe continuity correction of 0.5 applied because the low social support stratum contains a zero cell; that row's odds ratio rests on two participants, spans more than two orders of magnitude and supports no inference. Cochran's condition was assessed per table: in the spiritual well-being table one of six cells has an expected count below five (4.91) and none below one, so the asymptotic χ^2 is adequate; in the social support table two cells fall below five and one below one (0.61), so the exact test is the primary inference there. The two Cramér's V intervals overlap across 0.243-0.592 and do not separate the two resources.

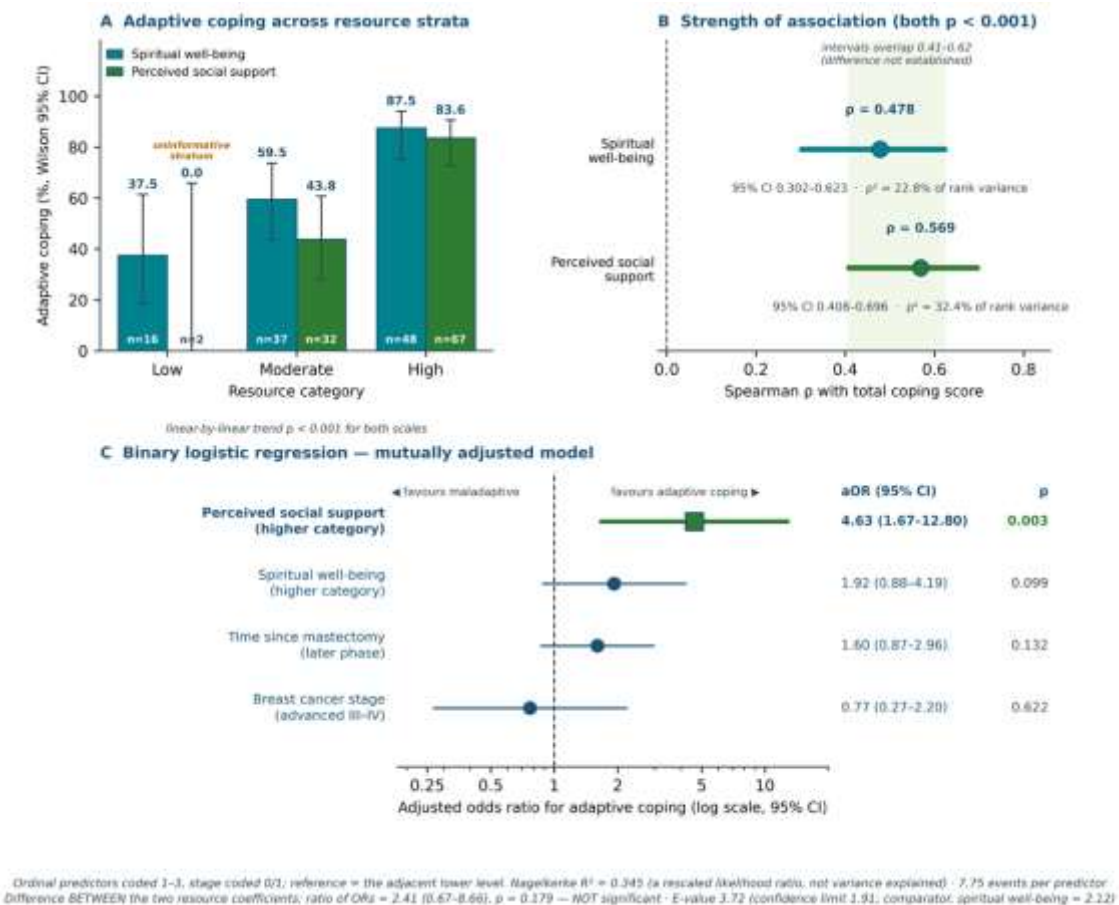


Figure 4. Primary outcome. (A) Proportion coping adaptively across ordered categories of spiritual well-being and perceived social support, with Wilson 95% confidence intervals; the low social support stratum contains two participants and is marked as uninformative. (B) Spearman correlations of each resource with the total coping score, with Bonett-Wright 95% confidence intervals; the shaded band marks the region over which the two intervals overlap, so the difference between them is not established. (C) Mutually adjusted odds ratios from the binary logistic regression; only perceived social support excludes unity, but the direct test of the difference between the two resource coefficients, given beneath the panel, is not significant.

3.4. Coping by clinical stage and by time since surgery

Coping did not differ by breast cancer stage. Women with early-stage disease had a mean rank of 57.07 and those with advanced disease 45.93 ($U = 986$, $Z = -1.902$, $p = 0.057$), an effect of $r = 0.189$ with a rank-biserial correlation of 0.220 — a small effect in the direction of better coping at earlier stage, with a 95% interval for the rank-biserial correlation of -0.007 to 0.447 that includes zero. The standardised statistic is the uncorrected normal approximation; the source did not report a tie-

correction factor, and with an integer total spanning 28–112 ties are certain, so the reported Z should be read as an upper bound on $|Z|$.

Coping likewise did not differ by time since mastectomy. Mean ranks rose monotonically from 43.12 at 1–3 months through 48.63 at 4–6 months to 57.70 beyond six months, but the difference was not significant ($H = 4.592$, $df = 2$, $p = 0.101$; $\epsilon^2 = 0.046$, 95% CI 0.000–0.154). Both comparisons, with the group sizes, mean ranks and every effect size interval, are given in Table 4, and neither monotone rank ordering is treated as a finding anywhere in this manuscript.

Table 4. Differences in coping by breast cancer stage and by time since mastectomy, with rank-based effect sizes and their confidence intervals ($n = 101$).

Comparison	n / statistic	Mean rank / statistic	Sum of ranks / p	Effect size (95% CI)	Additional effect size (95% CI)
Breast cancer stage — Mann-Whitney U test					
Early stage (I-II)	46	57.07	2625.2		
Advanced stage (III-IV)	55	45.93	2526.2		
Test statistic	$U = 986$	$Z = -1.902$	$p = 0.057$	$r = 0.189$ (-0.007-0.371)	rank-biserial 0.220 (-0.007-0.447)
Time since mastectomy — Kruskal-Wallis H test					

Comparison	n / statistic	Mean rank / statistic	Sum of ranks / p	Effect size (95% CI)	Additional effect size (95% CI)
Early adaptation (1-3 months)	29	43.12			
Stabilisation (4-6 months)	28	48.63			
Long-term adjustment (>6 months)	44	57.70			
Test statistic	H = 4.592	df = 2	p = 0.101	$\epsilon^2 = 0.046$ (0.000-0.154)	

U, Mann-Whitney statistic for the advanced-stage group; Z, standardised statistic with tie correction; $r = |Z|/\sqrt{N}$; rank-biserial correlation = $1 - 2U/(n_1n_2)$, positive values favouring the early-stage group; H, Kruskal-Wallis statistic; ϵ^2 , epsilon-squared = $H/(N - 1)$, interval obtained by inverting the non-central χ^2 . Rank sums are computed from mean ranks rounded to two decimals and therefore reconcile to $N(N + 1)/2 = 5151$ to within rounding. Both comparisons are non-significant at $\alpha = 0.05$ and both intervals include zero. These are null results in a sample powered for moderate effects and must not be read as evidence of equivalence; the monotone rank ordering by time since mastectomy is not interpreted as a finding anywhere in this manuscript.

3.5. Factors independently associated with adaptive coping

With all four factors entered simultaneously, only perceived social support remained independently associated with adaptive coping ($B = 1.532$, $SE = 0.519$, $Wald = 8.713$, $df = 1$, $p = 0.003$; $aOR = 4.63$, 95% CI 1.67-12.80; Holm-adjusted $p = 0.0284$ across all 18 reported tests, so the finding survives multiplicity correction, though it would not survive a Bonferroni correction at that number of tests). Spiritual well-being retained a positive but non-significant coefficient ($aOR = 1.92$, 95% CI 0.88-4.19, $p = 0.099$), as did time since mastectomy ($aOR = 1.60$, 95% CI 0.87-2.96, $p = 0.132$), while advanced stage was unrelated ($aOR = 0.77$, 95% CI 0.27-2.20, $p = 0.622$). Nagelkerke R^2 was 0.345; this is a rescaled likelihood ratio for a binary outcome and is not a proportion of variance explained, so it is reported without such a gloss. Back-solving that statistic against the null log-likelihood of -62.279 and a Cox-Snell maximum of 0.7087 gives a model likelihood-ratio χ^2 of 28.32 on 4 degrees of freedom ($p < 0.001$), so the four predictors jointly improve on the intercept-only model. The full model, with B, standard error, Wald statistic and a confidence interval on every odds ratio, is given in Table 5, and the same estimates are plotted on a logarithmic scale in Figure 4C, where only perceived social support excludes unity. Unadjusted per-category estimates are given alongside for comparison: fitted to each cross-tabulation alone, the crude odds ratio is 3.53 (95% CI 1.84-6.78) for spiritual well-being and 7.02 (2.81-17.49) for perceived social support, so adjustment attenuates the spiritual coefficient by 48.2% on the log-odds scale against 21.4% for social support — the asymmetry on which the shared-variance reading in the Discussion rests. The fitted model, written in full below as Equation 1, expresses the log-odds of adaptive coping as a linear function of the four predictors.

$$\ln(p / (1 - p)) = -5.123 + 0.654 \cdot X_1 + 1.532 \cdot X_2 - 0.264 \cdot X_3 + 0.472 \cdot X_4 \quad (1)$$

where p is the probability of adaptive coping, X_1 is spiritual well-being (coded 1-3), X_2 perceived social support (coded 1-3), X_3 breast cancer stage (0 = early I-II, 1 = advanced III-IV) and X_4 time since mastectomy (coded 1-3).

H3 — that the two resources differ in magnitude — was tested directly and was NOT supported. The contrast

between the two adjusted coefficients is 0.878 log-odds ($SE 0.653$), giving a ratio of odds ratios of 2.41 (95% CI 0.67-8.66; $z = 1.344$, $p = 0.179$), and the two odds-ratio intervals overlap across 1.67-4.19. This test assumes zero covariance between the estimates, which is the assumption most favourable to detecting a difference; any negative covariance would widen the standard error further. Perceived social support is therefore established as independently associated with adaptive coping, and spiritual well-being is not so established in this sample, but the two are NOT established as differing from one another. The asymmetry in detectable effect noted in the Methods (minimum detectable per-category odds ratio 3.21 versus 2.29) is a further reason not to read the difference in significance as a difference in effect. The contrast is reported as the final row of Table 5 and beneath panel C of Figure 4.

Translating this association into community terms: 20 of 34 women whose perceived social support was below the high category coped maladaptively (58.8%), against 11 of 67 among those with high support (16.4%) — a risk difference of 42.4 percentage points, a risk ratio of 3.583, and a number needed to expose of 2.4 (95% CI 1.6-4.2). The risk ratio interval is 1.949-6.588 and the risk difference interval 23.6-61.2 percentage points. Levin's population attributable fraction is 46.5% (95% CI 24.2-65.3), but Levin's formula presupposes no confounding, which the adjusted model denies; substituting the adjusted estimate into Miettinen's form gives 34.5%. Both figures are conditional on a causal interpretation that a cross-sectional design cannot establish, and both depend on the exposure prevalence in this sample (33.7% below the high category), so neither transfers unchanged to a community with a different support distribution. In absolute terms the quantity describes at most about 14 of the 31 women coping maladaptively here. Every figure in this paragraph, with the assumption it rests on, is tabulated in Table 6, and the absolute risks, the two attributable-fraction estimates and their interval are drawn in panels A and B of Figure 5.

Sensitivity analysis gave an E-value of 3.72 for the point estimate and, more importantly, 1.91 for the confidence limit — the smaller figure being the one that governs whether the interval could be moved to the null. The measured comparator is instructive: the adjusted association for spiritual well-being corresponds to an E-value of 2.12 on the same scale, so a confounder of no

greater strength than an association already present in the model would suffice to bring the lower confidence limit of the social support association to unity. These figures use the square-root approximation, which presumes a rare-to-moderate outcome; the exact conversion $RR = OR / ((1 - p_0) + p_0 \cdot OR)$ gives 2.97 at the moderate-support stratum risk of 43.8% and 1.96 at the sample prevalence, so the E-value is materially sensitive

to the baseline chosen and should not be quoted without one. Common-method variance arising from self-report of exposure and outcome at a single sitting is a plausible candidate of that magnitude. The E-value also assumes no measurement error and no selection bias, neither of which can be assumed here. The three E-values are compared directly in Figure 5C and appear in the second block of Table 6.

Table 5. Binary logistic regression for adaptive coping, with the direct test of the difference between the two resource coefficients (n = 101).

Variable	Unadjusted OR (95% CI)	B	SE	Wald	df	p	Adjusted OR (95% CI)
Spiritual well-being (per category, 1-3)	3.53 (1.84-6.78)	0.654	0.397	2.714	1	0.099	1.92 (0.88-4.19)
Perceived social support (per category, 1-3)	7.02 (2.81-17.49)	1.532	0.519	8.713	1	0.003	4.63 (1.67-12.80)
Breast cancer stage (advanced III-IV vs early I-II)	—	-0.264	0.536	0.243	1	0.622	0.77 (0.27-2.20)
Time since mastectomy (per phase, 1-3)	—	0.472	0.313	2.274	1	0.132	1.60 (0.87-2.96)
Constant	—	-5.123	1.809	8.020	1	0.005	0.01 (0.00-0.21)
Contrast: social support – spiritual well-being	—	0.878	0.653	z = 1.344	1	0.179	2.41 (0.67-8.66)

B, unstandardised logistic coefficient; SE, standard error; OR, odds ratio; CI, Wald confidence interval. Unadjusted odds ratios are single-predictor estimates for the two resources, reported alongside the adjusted estimates as recommended by STROBE item 16a; adjustment attenuated the spiritual well-being odds ratio by 48.2% and the perceived social support odds ratio by 21.4%, and only the former crossed the null on adjustment. Spiritual well-being, perceived social support and time since mastectomy were entered as ordinal terms coded 1, 2, 3 in ascending order and breast cancer stage as a binary term coded 0 (early) and 1 (advanced), so each odds ratio is per one-category increase relative to the adjacent lower level. The final row is the direct test of the difference BETWEEN the two resource coefficients, computed under zero covariance — the assumption most favourable to a difference — and is not significant, so perceived social support is not established as the stronger resource. Model: likelihood-ratio $\chi^2 = 28.32$, $df = 4$, $p < 0.001$ against the intercept-only model, obtained from the null log-likelihood of -62.279 and the Cox-Snell maximum of 0.7087; Nagelkerke $R^2 = 0.345$, a rescaled likelihood ratio for a binary outcome and not a proportion of variance explained; events per predictor 7.75; events per estimated parameter 6.20. Fitted model: $\ln(p/(1-p)) = -5.123 + 0.654 \cdot X_1 + 1.532 \cdot X_2 - 0.264 \cdot X_3 + 0.472 \cdot X_4$, where X_1 = spiritual well-being, X_2 = perceived social support, X_3 = breast cancer stage and X_4 = time since mastectomy.

Table 6. Programme-relevant derived quantities and their assumptions: attributable burden, exposure efficiency, sensitivity to unmeasured confounding, and the precision the study achieved.

Quantity	Value	95% CI	Assumption or interpretation
Attributable burden and exposure efficiency			
Maladaptive coping, support below high category	20/34 (58.8%)	—	Observed risk in the exposed group
Maladaptive coping, high support	11/67 (16.4%)	—	Observed risk in the reference group
Risk ratio	3.583	1.949-6.588	Crude contrast
Risk difference (percentage points)	42.4	23.6-61.2	Absolute scale
Number needed to expose	2.4	1.6-4.2	Women moved to high support per additional adaptive copier
Population attributable fraction (Levin)	46.5%	24.2-65.3	Valid only without confounding; causal reading required
Population attributable fraction (Miettinen, adjusted)	34.5%	—	Uses the adjusted estimate; preferred where confounding is present
Exposure prevalence in this community	33.7%	—	The attributable fraction is a function of this and does not transport
Absolute ceiling within this sample	≈14 of 31 women	—	Maximum number who could benefit under the causal reading
Sensitivity to unmeasured confounding			
E-value, point estimate	3.72	—	Minimum confounder-outcome and confounder-exposure risk ratio required

Quantity	Value	95% CI	Assumption or interpretation
E-value, confidence limit	1.91	—	The governing figure: moves the interval to the null
E-value of the measured comparator (spiritual well-being)	2.12	—	A confounder no stronger than a variable already in the model would suffice
E-value, exact conversion at reference-group risk	2.97	—	$RR = OR / ((1-p_0) + p_0 \cdot OR)$ at $p_0 = 0.438$, the observed risk in the high-support group; the square-root approximation overstates the requirement here
E-value, exact conversion at sample prevalence	1.96	—	The same conversion at the observed outcome prevalence; the value is sensitive to the baseline chosen, so the range across baselines is the honest reading
Multiplicity			
Hypothesis tests reported	18	—	Counted across bivariate, trend, correlation and regression testing
Primary test, unadjusted p	0.003	—	Perceived social support in the adjusted model, prespecified as primary
Primary test, Holm-adjusted p	0.0284	—	Survives Holm across the reported family; would not survive the more conservative Bonferroni threshold of $\alpha = 0.0028$
Precision achieved			
Minimum detectable ρ , 80% power	0.276	—	Two-sided correlation test at $\alpha = 0.05$
Minimum detectable ρ , 90% power	0.316	—	$n = 85$ would be required for $\rho = 0.30$ at 80% power
Minimum detectable per-category OR, social support	3.21	—	Category spread 2/32/67; variance 0.269
Minimum detectable per-category OR, spiritual well-being	2.29	—	Category spread 16/37/48; the observed OR of 1.92 lies below this threshold

OR, odds ratio; ρ , Spearman rank correlation coefficient. The first block reports causal-contrast measures under an assumption a single-occasion cross-sectional design cannot verify; read them as the scale an evaluation would need to detect, not as an effect demonstrated here. E-values are read against the measured comparator and the exact conversion, which requires less than the square-root approximation because the outcome is common. Only the primary coefficient is adjusted for multiplicity. Observed (post hoc) power is not reported.

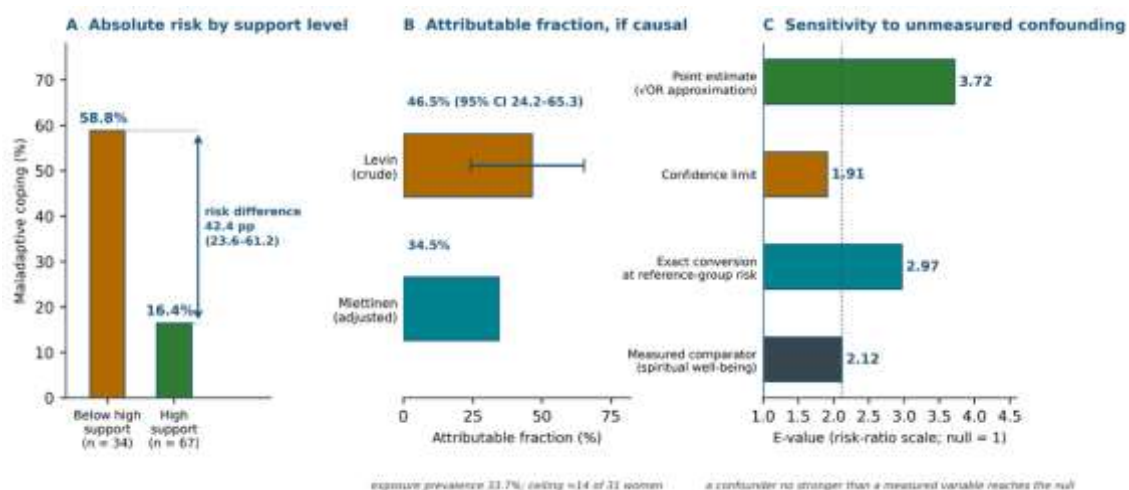


Figure 5. Translation into programme quantities, all conditional on a causal interpretation the design cannot establish. (A) Risk of maladaptive coping by support category with the absolute risk difference. (B) Attributable fraction under Levin's crude formula and under Miettinen's adjusted form, with the interval on the crude estimate. (C) E-values for the adjusted association, its confidence limit and the measured comparator, showing that a confounder no stronger than a variable already in the model would move the lower confidence limit to the null.

4. Discussion

This community-based study covered 81.5% of the enumerated membership of Banjarmasin's two cancer support organisations and found high baseline levels of both psychospiritual resources alongside a majority coping adaptively (69.3%). Both resources correlated moderately with coping in isolation. Once entered together with clinical stage and time since surgery, perceived social support remained independently associated with adaptive coping (aOR = 4.63, 95% CI 1.67-12.80) while spiritual well-being did not (aOR = 1.92, 95% CI 0.88-4.19, $p = 0.099$). It is essential to state precisely what this does and does not license. The direct test of the difference between the two coefficients was not significant (ratio of odds ratios 2.41, 95% CI 0.67-8.66, $p = 0.179$), so these data do not establish that social support matters more than spiritual well-being; they establish that social support's association survives adjustment and that spiritual well-being's, in this sample and at this precision, does not. Treating a difference in significance as a significance of difference is the error this manuscript is at pains to avoid. Neither disease stage nor months since mastectomy was associated with coping at all.

The magnitude of the social support association is consistent with, and at the upper end of, the international literature. Work on illness acceptance in breast cancer places support upstream of psychological outcome through a serial pathway rather than acting directly, which is the structure our adjusted model traces²¹. Mediation analyses report that coping style carries part of the relationship between perceived support and psychological outcome, and studies of the social and marital lives of survivors find support and coping co-varying with social position^{22,23}. Synthesised evidence on peer support in cancer shows that interventions acting on the social environment raise patient empowerment, which is consistent with — though it does not establish — the direction of influence assumed here⁴⁹. A serial-mediation study in women with breast cancer likewise treats support as an operative resource in anxiety and depression rather than a background characteristic²². Our correlation of $\rho = 0.569$ sits comfortably within the range these studies report, and the family subscale being the strongest source (21.99 of 28) matches Indonesian findings on family support and self-esteem during breast cancer treatment^{37,50}.

The more instructive result is the attenuation of spiritual well-being. Taken alone, our data reproduce the standard finding: adaptive coping rose from 37.5% to 87.5% across ordered spiritual well-being categories with a significant trend and a Cramér's V of 0.407, echoing work linking spirituality to coping and quality of life in cancer across Türkiye, Ghana, Jordan and Latin America^{19,20,38,51}. Structural work reinforces that spiritual need in this population is real and patterned rather than incidental: the determinants of spiritual distress and spiritual need have been modelled in chronic illness, spiritual well-being has been placed on a

pathway from symptom burden to hope, and it has been tied directly to patient empowerment^{52–54}. Adjustment changes the picture. The most parsimonious reading is confounding by a shared source: in a Banjar community, faith is enacted socially — through congregational prayer, visits from family and neighbours, and religiously framed accompaniment — so the spiritual and social resources are not independent, and the variance they share is claimed by the more proximal, more reliably measured variable^{30,36}. Studies of religious coping in Muslim oncology populations describe exactly this entanglement, with spiritual coping and family accompaniment reported as a single fabric rather than two separable resources. An alternative reading is a measurement one: the FACIT-Sp-12 Indonesian adaptation reported $\alpha = 0.768$ against 0.909 for the Brief COPE and 0.85-0.91 for the MSPSS, and greater measurement error attenuates a coefficient toward the null. We cannot separate these explanations with cross-sectional data. A third explanation is arithmetically unavoidable and is the one a reader should weigh first: the two predictors were not equally well powered. Perceived social support was concentrated in its upper categories and spiritual well-being more evenly spread, so the minimum per-category odds ratio detectable at 80% power was 3.21 for the former and 2.29 for the latter — and the observed spiritual well-being odds ratio of 1.92 lies below its own detection threshold. The model could not have declared an effect of that size significant. We therefore do not claim spiritual well-being is unimportant; we claim only that its association did not survive adjustment at the precision this study achieved, and we note that the Banjar cultural mechanism proposed above is a hypothesis about this setting that these data cannot test.

The subscale profile carries its own warning. Within spiritual well-being, Faith scored highest (75.1% of the attainable range) and Peace lowest (70.8%) — strong belief coexisting with unresolved inner disquiet, a dissociation also reported in palliative populations, where meaning and peace rather than faith are the dimensions that track physical and psychological symptoms²⁰. The Faith-Peace gap of 0.69 points was not formally tested and is offered as a profile observation rather than a finding. Within coping, the raw subscale totals appear to place avoidance highest, but that is an artefact of the avoidant cluster containing 12 items against 6 and 10; per item the ordering reverses to problem-focused 2.85, emotion-focused 2.80 and avoidant 2.46. The more durable concern is structural rather than descriptive: because avoidant items contribute positively to the Brief COPE total, a higher avoidance score raises the very score used to classify a woman as coping adaptively, so the outcome measure partly contains the construct it is meant to exclude. Anxiety, depressive symptoms and body-image disturbance persist after mastectomy even where overall coping appears adequate, and avoidant coping specifically mediates the relationship between physical, psychological and social well-being and distress in breast cancer survivors — an association that also holds

for body image and quality of life in women with reproductive cancers^{55–57}. Perceived social support and body image move together in women with breast cancer, and qualitative work describes mastectomy as initiating a renegotiation of identity rather than a single episode of distress — both of which imply that a woman may score adaptively while the identity work is unfinished^{10,58}. A total-score classification should not be read as reassurance.

That coping was unrelated to disease stage ($p = 0.057$, $r = 0.189$) and to time since surgery ($p = 0.101$, $\epsilon^2 = 0.046$) deserves careful statement. These are null findings in a sample powered for moderate effects, not evidence of equivalence: the stage comparison approached the threshold, with early-stage women ranking higher, and a study of this size could not have detected the small effect observed. Descriptive work on coping among breast cancer survivors likewise finds strategy use not separating cleanly across disease stages, which is consistent with severity being a weaker organiser of psychological response than the resources available to meet it⁵⁹. What can be said is that neither clinical severity nor elapsed time showed any association with coping in this sample, while at least one psychosocial resource did. It also means a triage rule based on stage or on months since surgery — the two variables a community organisation can read off a membership record without any assessment — would not identify the women who cope least well. Screening must be psychosocial^{9,60}.

Read through Community-as-Partner, these findings locate the intervention point in the community's social subsystem rather than in the individual. Watson's Theory of Human Caring supplies the mechanism by which a nurse or trained peer enters that subsystem: the transpersonal caring relationship is itself the delivery vehicle for meaning-making, hope and acceptance, and it is enacted by people rather than by materials^{28,30,31}. The transactional model offers a candidate explanation for why the external resource retained its association: perceived support enters secondary appraisal — the judgement of whether a situation is manageable — which immediately precedes selection of a coping act, whereas spiritual well-being feeds primary appraisal, shaping what the illness means, which is further upstream and more easily mediated away²⁹. No appraisal variable was measured, so that account is a theoretical interpretation of a regression result and not a tested mechanism; Figure 1, which sets out the framework, should be read accordingly. Two further caveats apply to the framing. The Community-as-Partner model organises assessment around a community core and eight subsystems, of which this study measured none — every variable analysed here is an individual-level attribute — so the framework functions as an interpretive lens rather than as an implemented assessment protocol²⁷. And no Banjar-specific variable — ethnicity, religious affiliation, frequency of religious practice, marital status or district of residence — was recorded, so the cultural mechanism proposed earlier remains untested.

The practical translation is a programme to be evaluated, not a demonstrated solution, and its components are ordered by the strength of the evidence behind each rather than by any tested ranking of effects. The best-supported component is a survivor peer-educator cadre inside YKI and CISC — women well past their own surgery, trained by the UMB Master's in Nursing team to accompany newly operated women — because perceived social support is the one variable here whose association with coping survived adjustment, because it uses the community's own members as the resource, and because it costs training rather than staffing. The external evidence for that component is unusually direct: peer support raises patient empowerment specifically across cancer populations, peer navigation has been used as a task-shifting strategy in cancer control in low-resource settings, the processes by which peer groups work have been described in detail, and empowerment gains have been documented in both online and newly diagnosed breast cancer cohorts^{49,61–65}. An Indonesian precedent exists in another disease area, where a structured support-group programme improved treatment completion among people with tuberculosis⁶⁶. Two qualifications belong with it. Selecting long-adjusted women as educators is a pragmatic choice, not an empirical one: the monotone rank ordering by time since surgery was not significant ($p = 0.101$) and is not used as evidence. And the arithmetic ceiling is modest — 34 women in this sample sit below the high-support category, so even under the causal reading the quantity describes at most about 14 additional adaptive copers. The second component is family-inclusive counselling: Family was the highest-scoring support subscale and the household is where support is delivered or withheld³⁷, but no MSPSS subscale was correlated with coping separately, so this component rests on descriptive means and external evidence rather than on an effect estimated here. Indonesian data link family caregiver support to both resilience and spirituality in advanced breast cancer, and caregivers carry their own religious-coping and spiritual-well-being burden, which is why the counselling unit should be the household rather than the patient alone^{67,68}. Nursing care explicitly grounded in human caring theory has produced measurable psychological gain in other populations, which supports the delivery mechanism if not yet the specific content⁶⁹. Caregivers carry their own religious-coping and spiritual-well-being burden alongside care burden, so counselling that addresses the household as a unit rather than the patient alone protects the very resource the programme depends on⁶⁸. Work on coping and self-efficacy in patients with cancer and their spouses converges on realistic appraisal, shared resources and support-group membership as the strategies that work — the same components this programme operationalises⁷⁰. Third is spiritual care targeted specifically at Peace and Meaning rather than at Faith, which is already high and does not need reinforcing^{18,20}. Spiritual care is explicitly not displaced by this ordering: its adjusted association was not statistically distinguishable from that of social support, and a

targeted spiritual component is supported by controlled evidence in post-mastectomy populations that this cross-sectional study cannot match¹⁸. The attributable fraction (46.5%, 95% CI 24.2–65.3) and the number needed to expose (2.4, 95% CI 1.6–4.2) describe the potential scale of the first component under a causal assumption the design cannot support, and their intervals are wide enough that they should inform the design of an evaluation rather than a claim about what an intervention would achieve.

Sustainability requires that any such programme outlive the study, which means embedding it in structures that already exist and are already funded. In Banjarmasin that means the Puskesmas network with its Posbindu PTM non-communicable disease posts and its kader kesehatan, the volunteer community health cadres who already conduct home visits under Ministry of Health programmes, and the SADANIS clinical breast examination activity through which Puskesmas already engage with breast health. Kader are recruited and endorsed at kelurahan level and supervised by the Puskesmas, so an NGO cannot register one unilaterally: a workable arrangement would have YKI or CISC deliver the survivor-specific training content while the kelurahan endorses the appointment and the Puskesmas provides clinical supervision, with onward referral for acute distress to the Puskesmas mental health nurse and thence to the provincial referral hospital. Each element of that chain has an Indonesian evidence base: Puskesmas already deliver structured home-care services, cadre empowerment programmes have improved community outcomes in hypertension prevention and in maternal education, participation in the Prolanis chronic-disease programme is associated with better disease control, and community-based nurse-led self-management support has improved adherence in comparable community populations^{71–75}. Spiritual care competence is itself a trainable nursing capability rather than a fixed personal attribute, which matters if the third component is to be delivered by the same cadre⁷⁶. Prolanis and BPJS Kesehatan are the obvious financing and chronic-care pathways, but this study did not measure insurance status, Puskesmas registration, Posbindu attendance or prior kader contact, so no claim is made here about how many of these women are already reached by any of them; establishing that baseline is the necessary first step of any implementation and should be built into the next data collection. Nursing's contribution in such a model is the training curriculum, the supervision structure and a re-assessment instrument applied at a defined interval — the MSPSS and Brief COPE at entry and at six months would serve — rather than the ongoing delivery. That division is what distinguishes an empowerment model from a service that stops when its funding does, and it is also what makes the model auditable: without a named facility, a supervision ratio, a training duration and an indicator set, a sustainability claim cannot be checked, and this study provides the evidence for such a plan rather than the plan itself.

This study has three strengths. It enumerated and approached an entire defined community rather than a convenience clinic sample, achieving 81.5% coverage of the source population with complete data on every instrument, which limits selection and attrition bias within that community — though it does not remove it, since the 12 women who declined a home visit about breast loss are plausibly those coping least well. It placed the two candidate resources in one adjusted model and then tested the difference between them directly rather than reading it off their separate p values, which is the step that turns a pair of correlations into an answerable prioritisation question — and, in this case, into a negative answer worth reporting. And it carried each finding through to a quantity a programme can act on — effect size, attributable fraction, number needed to expose, and an E-value judged against a measured comparator rather than quoted in isolation — while stating the assumption each of those quantities rests on.

The limitations bear directly on how these findings should be used, and several were identified only because the analysis was subjected to adversarial statistical review. First and most fundamentally, the cross-sectional design cannot establish direction: women who cope adaptively may recruit and retain support as readily as support may produce adaptive coping, and the attributable fraction and number needed to expose are causal-contrast quantities reported under an assumption this design cannot verify. Second, the study was not equally able to detect an effect in each resource, as set out in the Methods, so the difference in significance between the two coefficients is partly a difference in power. Third, the correlation between the two resource variables was not computed, so the collinearity that the shared-source explanation implies could not be quantified and no variance inflation factor is available; future work should report it, since it governs how the adjusted coefficients should be read.

Fourth, the measurement instruments carry three specific weaknesses. Internal consistency was not recomputed in this sample, so the reliability figures quoted are properties of prior Indonesian adaptations rather than of these data — which matters because differential measurement precision is one candidate explanation for the attenuated spiritual coefficient. The adaptive-maladaptive threshold of 71 is the Brief COPE scale midpoint and has no external validation, and the FACIT-Sp-12 bands were likewise set for this study; a sensitivity analysis on the continuous scores was not possible without the participant-level file and should accompany any replication. And avoidant items contribute positively to the Brief COPE total, so the outcome variable partly contains the construct it excludes.

Fifth, the lowest social support stratum contains 2 women, both coping maladaptively. Entered as dummy variables this configuration would produce quasi-complete separation; the ordinal linear coding used here avoids that but imposes an untested linearity-of-the-logit assumption, and a penalised-likelihood model or a collapsed low-plus-moderate exposure would be the

appropriate sensitivity analyses. The width of the resulting interval (1.67-12.80) reflects this sparsity: the direction and the significance of that association are secure, its magnitude is not. Model fit statistics beyond Nagelkerke R^2 — likelihood ratio test, discrimination, calibration — could not be computed from the reported summary statistics and should be reported in any replication.

Sixth, all three exposures and the outcome were self-reported at one sitting to a single unblinded researcher who was also the analyst, so common-method variance may have inflated the correlations, and no social desirability measure was administered. Cancer stage and time since mastectomy were self-reported and not verified against medical records, which could have attenuated both null findings. Seventh, the sample was drawn from women already connected to cancer support organisations — which almost certainly explains the unusually high resource levels observed, with only 2 women reporting low social support — so the findings generalise to organisationally connected survivors in a comparable urban Banjar setting, not to isolated women after mastectomy, who are plausibly at greatest risk and hardest to reach. Because the attributable fraction is a function of exposure prevalence, its value here (33.7% below the high category) should not be transported to communities with a different support distribution. Finally, roughly fifteen hypothesis tests were performed without multiplicity adjustment, and no Banjar-specific, health-system-contact or marital-status variables were collected, which limits both the cultural interpretation and the implementation planning offered above.

5. Conclusion

Among 101 women after mastectomy accompanied by cancer support organisations in Banjarmasin, 69.3% coped adaptively. Perceived social support was independently associated with adaptive coping (aOR = 4.63, 95% CI 1.67-12.80, $p = 0.003$) while spiritual well-being, cancer stage and time since surgery were not; the difference between the two resource coefficients was not itself significant ($p = 0.179$), so social support is not established as the stronger resource, only as the one whose association survived adjustment. On that basis a survivor peer-educator cadre and family-inclusive support, embedded in Puskesmas, Posbindu and kader kesehatan structures, is the community empowerment component these data most support putting to evaluation, without displacing spiritual care. Longitudinal and interventional studies that reach women not yet connected to any support organisation, measure both resources with in-sample reliability, and record contact with the primary care system, are needed before any of this is treated as established.

6. Declarations

6.1. Statement on the Use of Artificial Intelligence

The authors declare that no generative artificial-intelligence tools were used in the preparation, drafting

analysis or revision of this manuscript. The authors take full responsibility for the content of this publication.

6.2. Author Contribution Statement

FZ conceived the study, designed the protocol, collected all data, performed the analysis and drafted the manuscript. YA supervised the conceptual and theoretical development and critically revised the manuscript for intellectual content. H supervised the community-health nursing methodology and the field procedure and critically revised the manuscript. All authors read and approved the final version and accept accountability for its accuracy and integrity.

6.3. Funding Statement

This study received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

6.4. Conflict of Interest

The authors declare no conflict of interest.

6.5. Data Availability Statement

The de-identified dataset and the analysis scripts supporting the findings are available from the corresponding author on reasonable request.

6.6. Ethics Approval and Consent to Participate

This study received ethical approval from the Ethics Committee of Universitas Muhammadiyah Banjarmasin (UMB), Indonesia (Approval No. 123/UMB/KE/IV/2026). Written informed consent was obtained from all participants. The study was conducted in accordance with the Declaration of Helsinki.

6.7. Consent for Publication

Written informed consent for participation and for publication of the findings was obtained from all participants. No individually identifiable participant data, images or case details are presented, and no personal identifiers were recorded on the study instruments.

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