Hypnotherapeutic Ego Strengthening with Male South African Coronary Artery Bypass Patients

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Morbidity (i.e., elevated anxiety and depression) is a common feature of coronary artery bypass surgery (CABS) patients, pre- and postoperatively. Since hypnotherapy can possibly reduce morbidity in CABS patients, the aim of this study was to determine the feasibility of hypnotherapeutic ego strengthening (HES) to facilitate patient coping with concomitant anxiety and depression. Fifty patients were randomly assigned to a non-intervention control group (n = 25) and an experimental group (n = 25) and exposed to a pre- and postoperative HES intervention. Anxiety and depression were assessed with the Beck Depression Inventory and Profile of Mood States, administered preoperatively, at discharge, and at 6-week follow-up. Findings confirmed large practical reductions of anxiety and depression in the experimental group and were maintained at follow-up, while a trend towards increased depression levels occurred in the control group. Although not generalizable, results suggest broadened applications of hypnotherapy with patients in cardiac centers.

Keywords: Anxiety, coronary artery bypass surgery, depression, ego strengthening, hypnosis, hypnotherapy

South Africa has one of the highest mortality rates due to coronary heart disease (CHD) in the world (South African Heart Foundation [SAHF], 1995; Van der Poel & Greeff, 2003). According to the SAHF (1995), four million White South Africans suffer from CHD and statistics indicate that one in three males and one in four females will develop CHD before age 60. However, even the customary low incidence of heart disease among Blacks is gradually rising as they adopt western life styles concomitant with westernization and urbanization (Seedat, Mayet, Latiff, & Joubert, 1992, 1993).

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Coronary artery bypass surgery (CABS) revolutionized the treatment of CHD and emerged as the treatment of choice in patients with left main-stem and triple-vessel disease, particularly when left ventricular function is already impaired (Mack, Magee, & Dewey, 2001; Underwood, Firman, & Jehu, 1993). Since CABS is a life-threatening event, patients approach surgery with tremendous distress. Apprehension, fear, anxiety, depression, anger, and emotional lability are common responses and are often the most problematic part of the procedure to endure (Martin & Thompson, 2000; Moore & Dolansky, 2001; Sunnen, 2000), causing such psychological strain on the adaptive capacity of the ego (Gahlaut, Srivastava, & Rastogi, 1993) that it is referred to as ego infarction (Hackett & Rosenbaum, 1980). Ironically hearts may recover more rapidly after CABS than patients’ mental states (Cohan, Pimm, & Jude, 1998).

Elevated pre- and postoperative anxiety and depression levels are common (Duits, Boeke, Duivenvoorden, Passchier, & Erdman, 1996). Vingerhoets (1998) reported a 33% increase in anxiety prior to surgery, escalating to 66% after surgery. Prevalence levels of preoperative depression ranges from 27% to 47%, but postoperative depression from 19% to 61% (Andrew, Baker, Kneebone, & Knight, 2000; Burg, Benedetto, Rosenberg, & Soufer, 2003; McKhann, Borowicz, Goldsborough, Enger, & Selnes, 1997). Although these reactions reflect a normal way of coping with CABS, untreated depression and anxiety can deplete patients’ physical and emotional reserves (Shuster, Stern, & Tesar, 1992), thus disrupting natural recuperative processes (Timmermans & Pelc, 1995). Hence, patients may pay enormous physical, psychological, and economic costs (Burg et al., 2003). Stress and depression are also associated with heightened postoperative morbidity and mortality in cardiac patients (Ashton, Whitworth, Seldomridge, Shapiro, & Weinberg, 1997; Connerney, Shapiro, McLaughlin, Bagiella, & Sloan, 2001; Trzcieniecka-Green & Steptoe, 1994).

Often poorly equipped psychologically to deal with the discomfort of surgery, patients experience increased psychosomatic symptoms due to psychological distress, which they attribute to bodily illness. They typically deny feelings of anxiety and depression and tend to report physical symptoms rather than affective or emotional complaints (Duits, Duivenvoorden, Boeke, Mochtar, Passchier, & Erdman, 2002). Medical professionals sometimes disregard emotional complaints, assuming they are consistent with and appropriate to cardiac surgery. Anxiety and depression in CABS patients can be so ambiguous that they are often undiagnosed and untreated (Wool, 1990). The psychological state of patients profoundly impacts on their quality of life and other aspects of postoperative behavior (Cohan et al., 1998). Lamarche, Taddeo, and Pepler (1998) propose that the way patients cope with CABS related stressors is determined by their psychological state, pre- and postoperatively. Diagnosing and treating clinically significant levels of anxiety and depression is therefore crucial in planning effective treatment (Duits, Boeke, Taams, Passchier, & Erdman, 1997; Martin & Thompson, 2000; Trzciennecka-Green & Steptoe, 1996).

Early psychological interventions can be therapeutic to patients across several quality of life domains (Martin & Thompson, 2000). Furthermore, Prevost and Deshotels (1993) report that proper psychological management can significantly reduce patient morbidity, possibly even constituting the single most important contributory factor to positive outcomes of CABS. Thus, recent research confirms that CABS patients experience unique stressors which require attention and immediate pre- and postoperative psychological intervention (Martin & Thompson, 2000; Sullivan, LaCroix, Russo,
Walker, 2001). The need for psychotherapeutic interventions is also supported by research findings indicating that surgery can be made more tolerable if patients are involved in a multidisciplinary environment (Dantas, Motzer, & Ciol, 2002).

Subsequent to extensive conceptual evolution, hypnotherapy has become accepted as a means of enhancing an individual’s perception of control, participation in, and mastery of difficult circumstances. Currently, a resurgence in the use of hypnotherapy and increased acceptance of hypnotherapy as a treatment modality in surgery is evident (Blankfield, 1991; Evans & Stanley, 1990, 1991; Fredericks, 2000, 2001; Kessler & Dane, 1996; Olness & Kohen, 1996; Pinnell & Covino, 2000; Sunnen, 2000; Varga & Dioszeghy, 2003). Hypnotherapeutic interventions have been used with hospitalized patients undergoing orthopedic, plastic, pediatric, obstetrical, gynecological, oncological, and general surgery (Fredericks, 2001; Manusov, 1990; Olness & Kohen, 1996). More specifically, hypnotherapy has been utilized effectively with cardiac surgical patients (Greenleaf, Fisher, Miaskowski, & DuHamel, 1992).

However, most recommendations for the utilization of hypnotherapy as an adjunct to medical treatment were based on anecdotal reports and isolated case studies. Researchers and clinicians alike lamented the paucity of outcome studies utilizing clinical hypnosis and noted the need for well-designed clinical research. Empirical support for the utility of hypnotherapeutic interventions would promote their wider acceptance in medicine (Pinnell & Covino, 2000).

In a recent study, Lang, Joyce, Spiegel, Hamilton, and Lee (1996) investigated the effects of hypnotic relaxation on intravenous drug use for anxiolysis and analgesia during radiologic interventional procedures. Thirty surgical patients were randomized to a self-hypnosis relaxation or a control group. The findings of this study provided support for the effectiveness of self-hypnotic relaxation in reducing the requirement for analgesic and anxiolytic intravenous medication. In another study, Lambert (1996) investigated the effects of hypnosis and guided imagery on the postoperative course of pediatric surgical patients. Fifty-two pediatric patients were randomly assigned to either a hypnosis or a control group. The patients in the hypnosis group had significantly lower postoperative pain ratings and shorter hospital stays than those in the control group. The results of this study pointed out the benefits of hypnosis in addition to standard preparation for children having elective surgical procedures. However, its potential for preoperative patient preparation has been grossly underutilized in surgery contexts.

Since surgical patients experience heightened emotional stress, they tend to be highly responsive to hypnotherapeutic suggestions. When hospitalized for major surgery they spontaneously enter into states of altered awareness (Fredericks, 2000, 2001; Sunnen, 2000). The hypnotic state allows increased access to imagery, fantasy, emotion and memories in this context of decreased defensiveness and increased receptivity (Frederick & McNeal, 1999). This offers unique opportunities to tailor communication to higher suggestibility levels of patients (Varga & Dioszeghy, 2003). As their capacity to cope with psychological distress associated with CABS will depend on their inner strengths (Frederick & McNeal, 1999), mobilization of ego strength is perceived as the key coping mechanism in patients undergoing surgery (Gahlaut et al., 1993).

Hypnotherapy offers abundant ego strengthening techniques for patients’ preparation and follow-through during CABS. Hypnotherapeutic ego strengthening (HES) techniques are potentially powerful because they increase conscious,
unconscious, and superconscious complementarity and endeavour to activate deep internal healing powers. Thus the patient’s ability to access inner resources and activate internal survival mechanisms is enhanced, although little is known about the nature and effectiveness of these techniques (Phillips, 2000). However, no research concerning the effectiveness of HES in pre- and postoperative management of CABS patients could be traced. The use of inner-strength techniques and other interventions associated with HES has only been partially realized and deserves further exploration (Frederick & McNeal, 1999).

Since the treatment of anxiety and depression is crucial to patient recovery, we hypothesized that hypnotherapeutic techniques would be useful to complement conventional medical treatment. Our study was designed to evaluate the use of an HES intervention in facilitating patients’ ability to cope with the psychological stresses of hospitalization and surgery associated with CABS.

**Method**

*Research Data*

A two-group three-time point design was used.

*Participants*

Fifty White, married, Afrikaans-speaking males, scheduled for their first CABS, were randomly allocated to an experimental ($n=25$) and a control group ($n=25$) respectively. All 50 participants completed the study until follow-up. Differences in morbidity amounted to a single patient who returned to theatre because of insufficient attachment of the bypass graft. In view of this complication the patient was excluded from the study and replaced by another. Their mean age was 56 years, on average they attended 12 years of education, and were admitted to Unitas Hospital (Pretoria, Gauteng Province) one day prior to surgery.

*Research instruments*

**Biographical Questionnaire.** The principal researcher developed a biographical questionnaire as a framework for the initial interview with couples which tapped the following variables: age, education, marital status, cardiac history, family health, life stressors, and social support.

**Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996).** This 21-item multiple choice questionnaire was developed to detect overt manifestations of depression. Scores range from 0 to 13 (minimal), 14 to 19 (mild) and 29 to 63 (severe), with higher scores indicating progressively severe levels of depression.

**Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1992).** This 65-item self-rating adjective checklist was designed to measure negative mood states like anxiety and depression. Though not scaled from mild to severe, the higher the score, the greater the degree of psychological distress.

*Statistical analysis.*

To determine pre-intervention group comparability, categorical biographical variables were compared by means of a chi-square analysis and the significance of differences between groups was determined by means of $t$ tests. $P$ values were noted in terms of which the degree of statistical significance between groups was established.
A two-way ANOVA with a group factor and a repeated measure factor over time was performed, from which the group by time interaction was assessed. The software system Statistica (StatSoft, Incorporated, 2003; data analysis software system, version 6, www.statsoft.com), was used for the statistical analysis of the data. To compare the means within and between groups in a multiple way, a Bonferroni-adjusted 0.0083 comparison-wise level of significance was used, which led to a family-wise level of at most 0.05. For statistically significant findings, effect sizes were calculated according to Cohen’s $d$ (Cohen, 1988) to determine the practical significance of the HES intervention. Using Cohen’s guidelines, large practical differences were indicated by $d = 0.8$, minor possible differences by $d = 0.2$, while an effect size of $d = 0.5$, was regarded as indicative of a tendency towards practical difference. A 95% confidence interval was reported as interval estimate for each of the baseline, posttest, and follow-up means (Easton & McColl, 2002).

**Procedure**

Patients provided informed consent to participate in the experimental or control group. They were interviewed, given the biographical questionnaire, BDI-II and POMS, assured of confidentiality and informed that they could answer questionnaires anonymously. Researcher assistance was provided during preassessment. Nursing staff consent concurred with that of the thoracic surgeon. Since nursing professionals only had to provide privacy for assessment and therapeutic interventions, no education was necessary. Likewise, nursing personnel caring for the two groups in the intensive care unit (ICU) and relevant open wards received no education or insight, so as not to influence participants’ responses.

The experimental group (EG) was given appropriate information on hypnotherapy and its advantages. The subjects then attended two 60-minute preoperative HES sessions individually in a private room the evening preceding surgery and on the morning thereof. The intervention included a progressive relaxation induction and special-place deepening technique. Then a metaphor focusing on spiritual inner strength and age progression was introduced. The second preoperative session included a preoperative rehearsal. The inner-strength and age-progression intervention was repeated in three postoperative HES sessions, and was presented on audiocassette during their postoperative hospital stay at a rate of one session daily. The principal author’s voice was used with classical music and administered under her care. Post-testing was scheduled individually at discharge and at 6-week follow-up. Patients were assisted in questionnaire completion since many found it impossible to respond otherwise.

The control group (CG) attended no inputs other than the pre-, post-, and follow-up assessment, and there were not any placebos involved. However, the control group patients were offered access to counseling services after their 6-week follow-up visit and thanked for their participation.

**Results**

**Pre-intervention group equivalence**

Although not evident in Table 1, the statistical analysis confirmed nonsignificant differences between the experimental and control group with regard to
biographical variables, medical history, anxiety, and depression. Thus pre-treatment group equivalence was endorsed (De Klerk, 2003).

### Table 1: Descriptive statistics concerning scores of the Experimental and Control Groups as attained during three assessments.

#### Experimental Group

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>SD</th>
<th>Lower CI (95%)</th>
<th>Upper CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BECK Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>13.04</td>
<td>6.14</td>
<td>10.51</td>
<td>15.57</td>
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<tr>
<td>Posttest</td>
<td>8.72</td>
<td>6.82</td>
<td>5.90</td>
<td>11.54</td>
</tr>
<tr>
<td>Follow-up</td>
<td>6.76</td>
<td>4.94</td>
<td>4.72</td>
<td>8.80</td>
</tr>
<tr>
<td><strong>POMS Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>18.00</td>
<td>12.26</td>
<td>12.94</td>
<td>23.06</td>
</tr>
<tr>
<td>Posttest</td>
<td>8.08</td>
<td>9.84</td>
<td>4.02</td>
<td>12.14</td>
</tr>
<tr>
<td>Follow-up</td>
<td>6.32</td>
<td>7.84</td>
<td>3.09</td>
<td>9.55</td>
</tr>
<tr>
<td><strong>POMS Anxiety</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>22.24</td>
<td>6.13</td>
<td>19.71</td>
<td>24.77</td>
</tr>
<tr>
<td>Posttest</td>
<td>15.20</td>
<td>4.40</td>
<td>13.39</td>
<td>17.01</td>
</tr>
<tr>
<td>Follow-up</td>
<td>11.60</td>
<td>4.11</td>
<td>9.90</td>
<td>13.30</td>
</tr>
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</table>

Note: \( n = 25 \) across all comparisons

#### Control Group

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>SD</th>
<th>Lower CI (95%)</th>
<th>Upper CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BECK Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>11.56</td>
<td>5.85</td>
<td>9.15</td>
<td>13.97</td>
</tr>
<tr>
<td>Posttest</td>
<td>15.56</td>
<td>6.95</td>
<td>12.69</td>
<td>18.43</td>
</tr>
<tr>
<td>Follow-up</td>
<td>16.36</td>
<td>9.55</td>
<td>12.42</td>
<td>20.30</td>
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<tr>
<td><strong>POMS Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>13.68</td>
<td>9.87</td>
<td>9.61</td>
<td>17.75</td>
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<tr>
<td>Posttest</td>
<td>14.72</td>
<td>12.73</td>
<td>9.46</td>
<td>19.98</td>
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<tr>
<td>Follow-up</td>
<td>13.96</td>
<td>12.95</td>
<td>8.61</td>
<td>19.31</td>
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<tr>
<td><strong>POMS Anxiety</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>19.72</td>
<td>6.15</td>
<td>17.18</td>
<td>22.26</td>
</tr>
<tr>
<td>Posttest</td>
<td>20.28</td>
<td>6.39</td>
<td>17.64</td>
<td>22.92</td>
</tr>
<tr>
<td>Follow-up</td>
<td>17.16</td>
<td>5.74</td>
<td>14.79</td>
<td>19.53</td>
</tr>
</tbody>
</table>

Note: \( n = 25 \) across all comparisons
Reliability of measuring instruments.

Although not standardized for South African populations, Cronbach alpha values of both measuring instruments indicated satisfactory internal consistency of 0.82 and 0.89 for anxiety and depression on the POMS respectively. The BDI-II’s internal reliability was 0.84.

Postintervention findings

Depression. Figure 1 shows that on the BDI-II a significant group by time interaction ($p < 0.001$) was obtained for depression. This confirmed that the apparent difference between the two group profiles of means over time (or tests) in Figure 1 was also statistically significant. Multiple comparisons within the EG resulted in a significant difference between pre- and posttests (means 13.04 vs. 8.72; $p = 0.041; d = 0.92$) and also in pre- and follow-up test (means 13.04 vs. 6.76; $p < 0.001; d = 0.92$). For the CG only the pre- and follow-up test differed significantly (means 11.56 vs. 16.36; $p = 0.014; d = -0.70$). As far as the comparison of groups is concerned, only at the follow-up test a practically significant difference between the means of EG and CG (6.76 vs. 16.36; $p < 0.001; d = -1.40$) occurred. Interestingly, mean depression levels of the EG remained within the minimal norm (0 to 13), while the CG mean depression levels showed an increase from minimal to mild (14 to 19) in pre-follow-up scores.

Figure 1: Mean BECK Depression scores of the Experimental and Control patients at baseline, post-testing and follow-up.
No significant differences existed within the CG. Neither did significant differences occur between the experimental and control group in both post- and follow-up assessment.

**Figure 2:** Mean POMS Depression scores of the Experimental and Control patients at baseline, post-test and follow-up.

![Graph showing POMS Depression scores](image)

**Anxiety.** Figure 3 reflects that on the POMS a significant group by time interaction \((p < 0.001)\) was obtained for anxiety, too. It implied that the apparent difference between the two group profiles of means over time (or tests) in Figure 3 was statistically significant. Multiple comparisons within the EG firstly resulted in a reduction between pre- and post tests, which was statistically and practically significant (means 22.24 vs. 15.20; \(p < 0.001; d = 1.27\)). Similarly, the pre- versus follow-up tests yielded statistically and practically significant findings (means 22.24 vs. 11.60; \(p < 0.001; d = 1.91\)). No significant differences occurred within the CG, while the groups were not significantly different in both post- or follow-up assessment.

**Discussion**

The results confirmed the presence of psychological comorbidity in CABS patients who experienced a sense of loss, uncertainty, and vulnerability. Participants experienced significant reductions in postoperative mood states like anxiety and depression, which was maintained at 6-week follow-up. Hence the results suggested that HES techniques provided patients with coping mechanisms for alleviating CABS distress. In contrast, morbidity was not reduced in the control group.

Prior studies of psychological preparation for surgery have focused on reassurance given to patients preoperatively and informing them of what to expect postoperatively, including suggestions of relaxation and confidence, breathing techniques and music, as well as verbal rehearsal of routine procedures undergone by
surgical patients (Lamarche et al., 1998; Linden, 2000).

Our psychological findings concerning reduced depression and anxiety with CABS patients are supported by the results of several studies (Ashton et al., 1997; Blankfield, Zyzanski, Flocke, Alemagno & Scheurman, 1995; Robb, Nichols, Rutan, Bishop & Parker, 1992; Trzcieniecka-Green & Steptoe 1994). Ashton et al. (1997) evaluated the effects of self-hypnosis and its role in surgery and found that patients who received self-hypnosis training experienced a significant reduction in postoperative tension, compared to patients in the control group. Decreasing tension and anxiety led to short-term and long-term psychological benefits. Both standardized and individualized audiotaped hypnotherapeutic inductions and suggestions have also been shown to be beneficial for anxious surgical patients (Blankfield et al., 1995). Trzcieniecka-Green and Steptoe (1994) also found significantly reduced depression, negative mood states, and enhanced psychological well-being, following relaxation-based stress management, utilizing autogenic training and visual metaphors. Robb et al. (1995) showed the benefits and effectiveness of music assisted relaxation interventions to manage stress and anxiety of surgical patients. We were encouraged by the above findings, as results of our own study seem to support these conclusions.

Greenleaf et al. (1992) studied 32 CABS patients to examine the effect of hypnosis on recovery from surgery. The patients were assessed for hypnotizability with the Hypnotic Induction Profile (HIP) and randomly assigned to experimental groups to equate for differences in hypnotizability, age, and severity of illness. Scores on the HIP were significant predictors of recovery, independent of experimental treatment with formal hypnosis. Patients who scored midrange stabilized more quickly in the intensive care unit (ICU), than those who scored high or low. Results indicated that measured hypnotizability was associated with the recovery sequence from surgery. Trzcieniecka-Green & Steptoe (1994) also found that behavioral modification improves mobility,
functional status, social activity, restlessness, trembling, shortness of breath, fatigue, and loss of appetite. Although physiological anxiety reduction responses have not been monitored in our study, patients’ qualitative responses (De Klerk, 2003) revealed similar patterns of physiological and behavioural benefits as found by Greenleaf et al. (1992) and Trzcienniecka-Green & Steptoe (1994). Although not testing for hypnotizability, our findings are supported by the above investigations, in view of comparable experimental designs and concurring emphasis on anxiety reduction, by means of hypnosis with surgical patients. However, well-controlled studies are required to provide further support for the development of psychological interventions to assist patients during major surgical interventions.

Despite the positive outcome of our study, there were some limitations in its design. First, only two 60-minute preoperative HES sessions were conducted because of time constraints associated with hospitalization procedures. We believe that patients would have benefited more from HES had they not been hospitalized only a day prior to surgery. Although quality of life is often aggravated for several months post surgery, regrettably no further intervention occurred between discharge and 6-week follow-up, as patients hailed from afar. Had such interventions been possible, effects may have been enhanced. Similarly more repetitions of ego strengthening might have produced better outcomes.

Second, we only focussed on changes in mood states in CABS patients and did not investigate the effects of HES in its totality. However, physiological benefits and surgical outcomes might have rendered other substantial findings.

Third, it would have been worthwhile to test hypnotizability beforehand to determine whether the positive outcomes were produced by the treatment context or by participants’ hypnotic capabilities (Sapp, 1997). Regrettably, it was not feasible to assess hypnotizability independently in our study, in view of patient and time constraints, particularly their degree of preoperative stress and postoperative discomfort and fatigue.

Finally, omission of an attention/placebo group could arguably be perceived as a further limitation, especially coupled to the use of self-report inventories only. With only self-report responses and no attention/placebo group, it is uncertain how much of the results were due to non-specific effects associated with being offered an intervention which might relieve suffering, in contrast to the control group.

**Conclusion**

The findings of the study elucidated the efficacy of hypnotherapeutic ego strengthening. HES techniques have the potential to augment the impact of psychotherapeutic intervention during CABS. Its increased leverage can facilitate more rapid relief of disabling anxiety and depression. Elimination of these symptoms may facilitate inherent healing capacities in the body and enhance psychological well-being. Hypnotherapy may enable patients to explore their adaptive resources while controlling concomitant stressful symptoms, thus gaining understanding and acceptance of their surgical trauma. Thus, the significance of brief HES interventions in the preoperative preparation and postoperative well-being of patients to manage the traumatic experience of CABS was demonstrated, as well as the viability of service delivery within a compact inpatient format.

Minimal HES inputs and assessments due to time and patient constraints,
necessitate further quantitative and qualitative studies featuring HES applications in other hospital settings, to advance well-being through biopsychosocial patient care.

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