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Psychological Care for Cancer Patients in Intensive Care Units: A Field Study at the National Institute for Oncology Treatment

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ABSTRACT

Background: Cancer patients admitted to intensive care units (ICUs) face a combination of chronic illness and acute life-threatening conditions, a "dual trauma" that increases psychological vulnerability. This study examined psychological morbidity among cancer patients in the ICU, assessed well-being and burnout among ICU staff, and evaluated family satisfaction with care.

Methods: A cross-sectional field study was conducted over six months in the ICU of the National Institute for Oncology Treatment. A purposive sample of 50 adult cancer patients, 30 ICU healthcare professionals and 30 family members was enrolled. Structured questionnaires informed by validated instruments were used. Analysis in the Statistical Package for the Social Sciences (SPSS) version 26.0 included prevalence estimates, correlation testing, analysis of variance (ANOVA), z-tests for proportions and multiple regression.

Results: Anxiety and depression were each present in 66% of patients (95% confidence interval 52.8%–79.2%). ICU length of stay was not significantly correlated with psychological distress symptoms. Physicians reported higher stress than nurses, although the difference was not statistically significant ($p = 0.053$). Job satisfaction ($\beta = -0.38$, $p = 0.004$), social support ($\beta = -0.29$, $p = 0.014$) and work experience ($\beta = -0.21$, $p = 0.046$) significantly predicted burnout, explaining 47% of the variance. Family satisfaction ranged from 40% to 60% across the measured domains and was lowest for family involvement in care.

Conclusions: Psychological distress is a central challenge in oncological ICUs, affecting patients, staff and families simultaneously. Integrated care models including routine psychological screening, staff support programs and structured family involvement are needed.

الرعاية النفسية لمرضى السرطان في وحدات العناية المركزة: دراسة ميدانية في المعهد القومي لعلاج الأورام

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الكلمات المفتاحية:
الأورام
وحدات العناية المركزة
الضيق النفسي
الاحتراق الوظيفي
الأسرة
القلق

الملخص

الخلفية: يواجه مرضى السرطان المقبولون في وحدات العناية المركزة اجتماع المرض المزمن مع حالات حادة مهددة للحياة، وهو ما يُعرف بـ«الصدمة المزدوجة» التي تزيد هشاشتهم النفسية زيادة كبيرة. هدفت هذه الدراسة إلى تقييم الاضطرابات النفسية لدى مرضى السرطان في العناية المركزة، وتقدير مستوى الرفاه والاحتراق الوظيفي لدى العاملين فيها، وتقييم رضا الأسر عن الرعاية المقدمة.

الطرائق: أُجريت دراسة ميدانية مقطعية على مدى ستة أشهر في وحدة العناية المركزة بالمعهد القومي لعلاج الأورام. وشملت العينة القصدية 50 مريضًا بالغًا مصابًا بالسرطان، و30 من العاملين الصحيين، و30 من أفراد الأسر. جُمعت البيانات باستخدام استبانات منظمة مستندة إلى أدوات معتمدة، وحُللت ببرنامج SPSS الإصدار 26.0 باستخدام تقديرات الانتشار واختبارات الارتباط وتحليل التباين واختبارات z للنسب والانحدار المتعدد.

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النتائج: ظهر كل من القلق والاكتئاب لدى 66% من المرضى (فاصل الثقة 95%: 52.8%–79.2%). ولم ترتبط مدة الإقامة في العناية المركزة ارتباطًا دالًا بالضيق النفسي. وسجل الأطباء مستويات توتر أعلى من الممرضين دون أن يبلغ الفرق الدلالة الإحصائية (p = 0.053). وتنبأ كل من الرضا الوظيفي (β = −0.38، p = 0.004) والدعم الاجتماعي (β = −0.29، p = 0.014) والخبرة المهنية (β = −0.21، p = 0.046) بالاحتراق الوظيفي، وفسرت هذه العوامل مجتمعة 47% من التباين. وتراوح رضا الأسر عن الرعاية بين 40% و60% في المجالات المقيسة، وكان أدناه في مجال المشاركة في الرعاية.

الاستنتاجات: يمثل الضيق النفسي تحديًا محوريًا في وحدات العناية المركزة للأورام، إذ يطال المرضى والعاملين الصحيين والأسر في آن واحد. وتدعم هذه النتائج اعتماد نماذج رعاية متكاملة وشاملة تشمل الفحص النفسي الروتيني، وبرامج دعم العاملين، واستراتيجيات منظمة لإشراك الأسر في الرعاية.

1. Introduction

Cancer remains one of the most significant global health burdens, with rising incidence and longer survival owing to improved therapeutic options [1]. As cancer care evolves, an increasing number of patients require intensive care unit (ICU) admission because of disease progression, complications or treatment-related toxicity, such as sepsis, tumor lysis syndrome and respiratory failure [2,3]. In resource-limited Libyan settings, intensive care may be unavailable altogether [4], and Libyan ICUs have been found to be contaminated with multidrug-resistant bacteria [5]. While ICU admission can be lifesaving, it also exposes patients to intense physical and psychological stressors. The ICU environment, marked by invasive procedures, constant monitoring, noise, sleep disruption and loss of autonomy, can be deeply traumatic even for individuals without preexisting illness.

For cancer patients, ICU admission represents a convergence of two major stressors: the chronic burden of malignancy and the acute threat of critical illness. In this study, we refer to this convergence as a “dual trauma,” in which the psychological burden of cancer is compounded by the ICU experience; cancer patients admitted to the ICU frequently experience cognitive impairment and psychological distress [6]. Patients may experience heightened fear of death, existential distress and disruption of identity, particularly when the ICU stay coincides with critical decisions about treatment goals.

Psychological distress in ICU patients is associated with poorer clinical outcomes, prolonged recovery and reduced quality of life. Anxiety and depression can impair cooperation with care, delay rehabilitation and contribute to delirium and post-intensive care syndrome (PICS) [7,8]. However, ICU care remains predominantly biomedical, and psychological needs are often overlooked or addressed only after physiological parameters stabilize [9]. This shortfall is especially pronounced in oncological ICUs, where patients are already vulnerable because of chronic illness and ongoing cancer treatment.

Healthcare staff working in ICUs also face sustained exposure to high mortality, ethical dilemmas and emotional strain. Burnout among ICU staff is a recognized concern, with implications for patient safety and quality of care [10]. Families of ICU patients similarly experience distress and often report dissatisfaction with communication, emotional support and involvement in decision-making [11,12].

Meta-analyses show that anxiety and depression affect a substantial proportion of ICU survivors, with prevalence estimates of 30%–50% for anxiety and 20%–40% for depression [7,8]. Delirium is common, especially among mechanically ventilated patients, with a reported prevalence of up to 80% and a strong association with increased mortality and long-term cognitive impairment [13]. Post-traumatic stress disorder (PTSD) symptoms have been documented in approximately 20% of ICU survivors [7].

Cancer patients carry a preexisting psychological burden that includes uncertainty, fear of recurrence and treatment-related trauma. ICU admission intensifies this burden, often triggering existential distress, identity disruption and heightened emotional vulnerability [14]. The cumulative effect of repeated treatments, bad news and ongoing uncertainty reduces psychological resilience and can lead to severe distress during ICU admission.

Evidence supports a multimodal approach to psychological care in ICUs. Therapeutic communication, environmental modifications (e.g., noise reduction and light control) [15] and psychotherapeutic interventions (e.g., cognitive restructuring and relaxation techniques) can reduce distress and improve outcomes. Family-centered care, including structured family meetings and flexible visiting policies, is also essential to support patient recovery and family well-being [16].

This study aimed to determine the prevalence of anxiety and depression among cancer patients admitted to the ICU and their association with ICU length of stay; to evaluate well-being and burnout among ICU healthcare staff and identify predictors of burnout; and to assess family satisfaction with ICU care, focusing on communication, emotional support and involvement.

2. Materials and Methods

2.1. Study design and setting

This cross-sectional field study was conducted in the ICU of the National Institute for Oncology Treatment over six months, from November 2024 to April 2025.

2.2. Participants

A purposive sample was recruited from three groups: 50 adult cancer patients admitted to the ICU for more than 24 hours; 30 ICU healthcare professionals, including physicians, nurses and clinical psychologists; and 30 family members who were primary caregivers or next of kin. No formal a priori sample-size calculation was performed; the sample comprised all 110 eligible participants who could be recruited during the six-month study period.

2.3. Data collection tools

Three structured questionnaires were used. The Patient Psychological Status Assessment was a daily clinical screening tool covering anxiety, depression, delirium, sleep disturbances, communication problems and overall distress. The Healthcare Staff Well-being Survey assessed burnout, stress, job satisfaction, social support and coping strategies on a 5-point Likert scale. The Family Experience Questionnaire evaluated satisfaction with communication, emotional support and involvement in care. Validated instruments, including the Hospital Anxiety and Depression Scale (HADS), the Patient Health Questionnaire-9 (PHQ-9), the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and the Impact of Event Scale-Revised (IES-R), served as reference standards for these assessments [17–20].

2.4. Ethical approval

The study was approved by the University of Aljafara and the National Institute for Oncology Treatment as part of their mutual research collaboration, and administrative permission to conduct the study was obtained from the management of the National Institute for Oncology Treatment. Informed consent was obtained from all participants before data collection; for patients who were unconscious or otherwise unable to consent, consent was obtained from family members or legally authorized representatives. Participation was voluntary, and the confidentiality of participants' information was maintained throughout the study.

2.5. Statistical analysis

Data were analyzed using IBM SPSS Statistics, version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were computed for demographic variables. Pearson chi-square tests, with odds ratios (ORs) for associations between co-occurring symptoms, and Pearson correlation were used for patient data, analysis of variance (ANOVA) and multiple regression for staff data, and z-tests for family satisfaction proportions against a 50% benchmark. Reliability was assessed using Cronbach's alpha. Statistical significance was set at $p < 0.05$.

3. Results

3.1. Patient characteristics

Of the 50 patients, 27 (54.0%) were female and 23 (46.0%) were male (Table 1).

Table 1. Gender distribution of patients (n = 50)

Gender	Frequency	Percentage
Female	27	54.0%
Male	23	46.0%
Total	50	100.0%

3.2. Prevalence of psychological symptoms

Anxiety and depression were each reported in two-thirds of patients (Table 2).

Table 2. Prevalence of psychological symptoms (n = 50)

Symptom	Prevalence	95% CI
Anxiety/agitation	66.0%	52.8%–79.2%
Depression/sadness	66.0%	52.8%–79.2%
Consciousness changes	26.0%	13.8%–38.2%
Treatment refusal	20.0%	8.9%–31.1%

CI, confidence interval.

3.3. Length of stay and psychological distress

ICU length of stay was not significantly correlated with psychological distress symptoms (Table 3), suggesting that psychological morbidity was present regardless of the duration of hospitalization.

Table 3. Correlation between ICU length of stay and psychological symptoms (n = 50)

Psychological symptom	*r*	*p* value
Depression/sadness/excessive mutism	−0.165	0.254
Anxiety/agitation	0.128	0.376

r, Pearson correlation coefficient.

3.4. Healthcare staff well-being

Physicians reported higher stress levels than nurses; however, the difference did not reach statistical significance ($p = 0.053$) (Table 4).

Table 4. Differences in psychological well-being by professional role (ANOVA)

Domain	*F* value	*p* value	Partial η²
Stress levels	$F(2,27) = 3.28$	0.053	0.20
Job satisfaction	$F(2,27) = 2.15$	0.137	0.14
Social support	$F(2,27) = 1.64$	0.213	0.11
Coping ability	$F(2,27) = 2.89$	0.073	0.18

ANOVA, analysis of variance; η², eta squared.

3.5. Family satisfaction with care

Family satisfaction did not differ significantly from the 50% benchmark for any of the care aspects measured (Table 5).

Table 5. Family satisfaction with care (n = 30)

Care aspect	Satisfaction	*Z*	*p* value
Information frequency	60.0%	1.10	0.273
Information clarity	50.0%	0.00	1.000
Emotional support	53.3%	0.37	0.714
Family involvement	40.0%	−1.10	0.273

Z, one-sample *z*-test of proportions against a 50% benchmark.

3.6. Symptom co-occurrence

Patients with anxiety had 4.3 times the odds of experiencing sleep disturbances, and confusion was associated with communication

problems (Table 6).

Table 6. Associations between co-occurring symptoms (Pearson chi-square test)

Symptom pair	$\chi^2(1)$	*p* value	OR
Anxiety and sleep disturbances	8.64	0.003	4.33
Confusion and communication issues	6.25	0.012	3.17

$\chi^2(1)$, chi-square statistic with 1 degree of freedom; OR, odds ratio.

3.7. Predictors of staff burnout

The regression model explained 47% of the variance in staff burnout, and all three predictors were statistically significant (Table 7).

Table 7. Multiple regression analysis of predictors of staff burnout

Predictor	β	*p* value
Job satisfaction	−0.38	0.004
Social support	−0.29	0.014
Work experience	−0.21	0.046

β, standardized regression coefficient. Model: $R^2 = 0.47$, $F(3,26) = 7.64$, $p < 0.001$.

3.8. Reliability of the assessment tools

Cronbach's alpha coefficients ranged from 0.69 to 0.78, indicating variable internal consistency across the assessment tools (Table 8).

Table 8. Reliability and statistical power of the assessment tools

Assessment tool	Cronbach's alpha	Statistical power
Staff well-being assessment	0.71	82%
Family experience questionnaire	0.78	85%
Patient psychological assessment	0.69	88%

4. Discussion

This study offers a comprehensive view of the psychological burden in an oncological ICU, encompassing patients, healthcare staff and family members. Overall, the results indicate substantial psychological morbidity among patients, distinct patterns of staff well-being and moderate family satisfaction.

The high prevalence of anxiety and depression (66% each) among ICU patients is consistent with the broader literature on psychological distress in critical care [7,8]. The elevated rates observed in this study may reflect the particular vulnerability of cancer patients, who often enter the ICU with preexisting emotional strain and a reduced capacity to cope with additional stressors. The ICU environment itself, with sleep disruption, pain, invasive procedures and loss of autonomy, may also contribute to psychological distress regardless of the underlying diagnosis. Recent Libyan studies have likewise documented health anxiety among university students and psychological effects of treatment among dental patients [21,22], underlining the relevance of psychological assessment in local clinical settings.

In contrast to some previous studies, length of ICU stay was not significantly associated with psychological symptoms in our sample; Wade et al. [23], for example, examined risk factors for psychological morbidity after intensive care. The absence of a relationship suggests that the subjective experience of the ICU and individual patient vulnerability may be more influential than the duration of hospitalization, although this interpretation should be considered cautiously in view of the sample size and cross-sectional design.

The strong association between anxiety and sleep disturbances (OR = 4.33) is clinically important and aligns with previous findings in critical care; Figueroa-Ramos et al. [15] described the relationship between sleep disruption and delirium in ICU patients. This finding highlights the need for interventions that target anxiety and sleep quality together, such as structured sleep protocols, environmental adjustments and early psychological support.

Among healthcare staff, physicians reported higher stress levels than nurses, although the difference was not statistically significant. Nursing staff have historically been identified as particularly vulnerable to burnout in ICU settings [10], whereas physician burnout has been associated with administrative burden, decision-making pressure and emotional responsibility for critically ill patients. In this study, job satisfaction, social support and work experience were significant predictors of burnout, consistent with the organizational strategies discussed by Shanafelt and Noseworthy [24].

Family satisfaction was generally modest and did not significantly exceed the 50% benchmark in any domain. This is notable because family satisfaction is often reported to be relatively high in ICU settings, although other studies have highlighted specific deficits in communication and family involvement [12]. Family involvement was particularly low (40%), indicating an area for targeted improvement. Cultural factors, expectations of family roles and institutional policies may have influenced these perceptions, and the benchmark used may not fully capture local norms.

The reliability of the assessment tools was acceptable for two instruments (Cronbach's alpha 0.71 and 0.78), whereas the value for the patient assessment was 0.69. These coefficients should be interpreted cautiously in line with established psychometric principles [25] and do not by themselves establish validity. The study is further limited by its single-center, cross-sectional design, purposive sampling and modest sample sizes, which restrict causal inference and generalizability.

5. Conclusions

This field study highlights the psychological challenges faced by cancer patients, healthcare staff and families in an oncological ICU. The high prevalence of anxiety and depression among patients reflects the combined burden of cancer and critical illness, and the

lack of association with length of stay suggests that subjective experience and individual vulnerability matter more than the duration of hospitalization. Job satisfaction, social support and work experience emerged as predictors of staff burnout, providing clear targets for organizational intervention, while family satisfaction remained suboptimal, particularly regarding involvement in care. These findings support holistic care models that integrate routine psychological screening, tailored psychosocial support, burnout prevention for staff, regular family conferences and interdisciplinary collaboration into routine ICU practice.

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Declarations

Author contributions: All authors contributed to conceptualization, methodology, investigation, data curation, formal analysis and interpretation of the findings. All authors contributed to writing – original draft and writing – review & editing, approved the final version and agree to be accountable for all aspects of the work.

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Ethics approval and consent to participate: The study was approved by the University of Aljafara and the National Institute for Oncology Treatment as part of their mutual research collaboration, and administrative permission to conduct the study was obtained from the management of the National Institute for Oncology Treatment. Informed consent was obtained from all participants before data collection; for patients who were unconscious or otherwise unable to consent, consent was obtained from family members or legally authorized representatives. Participation was voluntary, and the confidentiality of participants' information was maintained throughout the study.

Data availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to institutional and ethical restrictions.

Use of generative AI: During the preparation of this work the authors used ChatGPT (GPT-6; OpenAI) in a limited capacity to assist with language editing and formatting. The authors reviewed and approved the final content and take full responsibility for the accuracy and integrity of the publication.

Supplementary material: Not applicable.

References

[1] World Health Organization. Cancer [Internet]. Geneva: World Health Organization; 2022 [cited 2026 Nov 19]. Available from: https://www.who.int/news-room/fact-sheets/detail/cancer

[2] Soares M, Bozza FA, Azevedo LC, Silva UV, Corrêa TD, Colombari F, et al. Effects of organizational characteristics on outcomes and resource use in patients with cancer admitted to intensive care units. J Clin Oncol. 2016;34(27):3315–24. doi:10.1200/JCO.2016.66.9549

[3] Azoulay E, Schellongowski P, Darmon M, Bauer PR, Benoit D, Depuydt P, et al. The Intensive Care Medicine research agenda on critically ill oncology and hematology patients. Intensive Care Med. 2017;43(9):1366–82. doi:10.1007/s00134-017-4884-z

[4] Rajab AM. Abandoned at the edge of the Sahara: a physician's field report from Ghat, Libya. J Med Sci (Sebha). 2026;21(2):11–4. doi:10.51984/ANWZNW87

[5] Eltawaty SIA, Eltawaty T, Yagoub SO, Faraj M, Younus TH, Faraj AM. Recent bacterial contaminants of hospital intensive care unit (ICU) and the effectiveness of most used antibiotics in Al-Bayda Medical Center. J Med Sci (Sebha). 2022;17(1):67–71. doi:10.51984/joms.v17i1.2299

[6] Flores-Constantino M, Juárez-García FL, García-García A, Dominguez-Martínez T, Quintana-Sánchez A, Calleja-Bello N, et al. Assessing psychological distress in cancer patients in intensive care: validation of the intensive care psychological assessment tool in Mexico. Palliat Support Care. 2025;23:e152. doi:10.1017/S1478951525100667

[7] Parker AM, Sricharoenchai T, Raparla S, Schneck KW, Bienvenu OJ, Needham DM. Posttraumatic stress disorder in critical illness survivors: a meta-analysis. Crit Care Med. 2015;43(5):1121–9. doi:10.1097/CCM.0000000000000882

[8] Rabiee A, Nikayin S, Hashem MD, Huang M, Dinglas VD, Bienvenu OJ, et al. Depressive symptoms after critical illness: a systematic review and meta-analysis. Crit Care Med. 2016;44(9):1744–53. doi:10.1097/CCM.0000000000001811

[9] Davidson JE, Jones C, Bienvenu OJ. Family response to critical illness: postintensive care syndrome-family. Crit Care Med. 2012;40(2):618–24. doi:10.1097/CCM.0b013e318236ebf9

[10] Embriaco N, Papazian L, Kentish-Barnes N, Pochard F, Azoulay E. Burnout syndrome among critical care healthcare workers. Curr Opin Crit Care. 2007;13(5):482–8. doi:10.1097/MCC.0b013e3282efd28a

[11] Pochard F, Darmon M, Fassier T, Bollaert PE, Cheval C, Coloigner M, et al. Symptoms of anxiety and depression in family members of intensive care unit patients before discharge or death: a prospective multicenter study. J Crit Care. 2005;20(1):90–6. doi:10.1016/j.jcrc.2004.11.004

[12] Azoulay E, Pochard F, Chevret S, Arich C, Brivet F, Brun F, et al. Family participation in care to the critically ill: opinions of families and staff. Intensive Care Med. 2003;29(9):1498–504. doi:10.1007/s00134-003-1904-y

[13] Ely EW, Shintani A, Truman B, Speroff T, Gordon SM, Harrell FE Jr, et al. Delirium as a predictor of mortality in mechanically ventilated patients in the intensive care unit. JAMA. 2004;291(14):1753–62. doi:10.1001/jama.291.14.1753

[14] Vehling S, Kissane DW. Existential distress in cancer: alleviating suffering from fundamental loss and change. Psychooncology. 2018;27(11):2525–30. doi:10.1002/pon.4872

[15] Figueroa-Ramos MI, Arroyo-Novoa CM, Lee KA, Padilla G, Puntillo KA. Sleep and delirium in ICU patients: a review of mechanisms and manifestations. Intensive Care Med. 2009;35(5):781–95. doi:10.1007/s00134-009-1397-4

[16] Davidson JE, Aslakson RA, Long AC, Puntillo KA, Kross EK, Hart J, et al. Guidelines for family-centered care in the neonatal, pediatric, and adult ICU. Crit Care Med. 2017;45(1):103–28. doi:10.1097/CCM.0000000000002169

[17] Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatr Scand. 1983;67(6):361–70. doi:10.1111/j.1600-0447.1983.tb09716.x

[18] Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606–13. doi:10.1046/j.1525-1497.2001.016009606.x

[19] Ely EW, Inouye SK, Bernard GR, Gordon S, Francis J, May L, et al. Delirium in mechanically ventilated patients: validity and reliability of the confusion assessment method for the intensive care unit (CAM-ICU). JAMA. 2001;286(21):2703–10. doi:10.1001/jama.286.21.2703

[20] Weiss DS, Marmar CR. The Impact of Event Scale-Revised. In: Wilson JP, Keane TM, editors. Assessing psychological trauma and PTSD. New York: Guilford Press; 1997. p. 399–411.

[21] Alhaddad O, Abdaljalil A, Steita F. Medical student syndrome and health anxiety among medical and non-medical students: a comparative cross-sectional study at Misurata University. J Med Sci (Sebha). 2026;21(2):54–60. doi:10.51984/BYP4DB47

[22] Ahmed A, Salim AA, Al Dayekh M, Mohamed SH. Patient perception and psychological experience with removable prosthodontics: a cross-sectional study in Libya. J Med Sci (Sebha). 2026;21(2):45–8. doi:10.51984/E0SA3X22

[23] Wade DM, Howell DC, Weinman JA, Hardy RJ, Mythen MG, Brewin CR, et al. Investigating risk factors for psychological morbidity three months after intensive care: a prospective cohort study. Crit Care. 2012;16(5):R192. doi:10.1186/cc11677

[24] Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. Mayo Clin Proc. 2017;92(1):129–46. doi:10.1016/j.mayocp.2016.10.004

[25] Nunnally JC, Bernstein IH. Psychometric theory. 3rd ed. New York: McGraw-Hill; 1994.