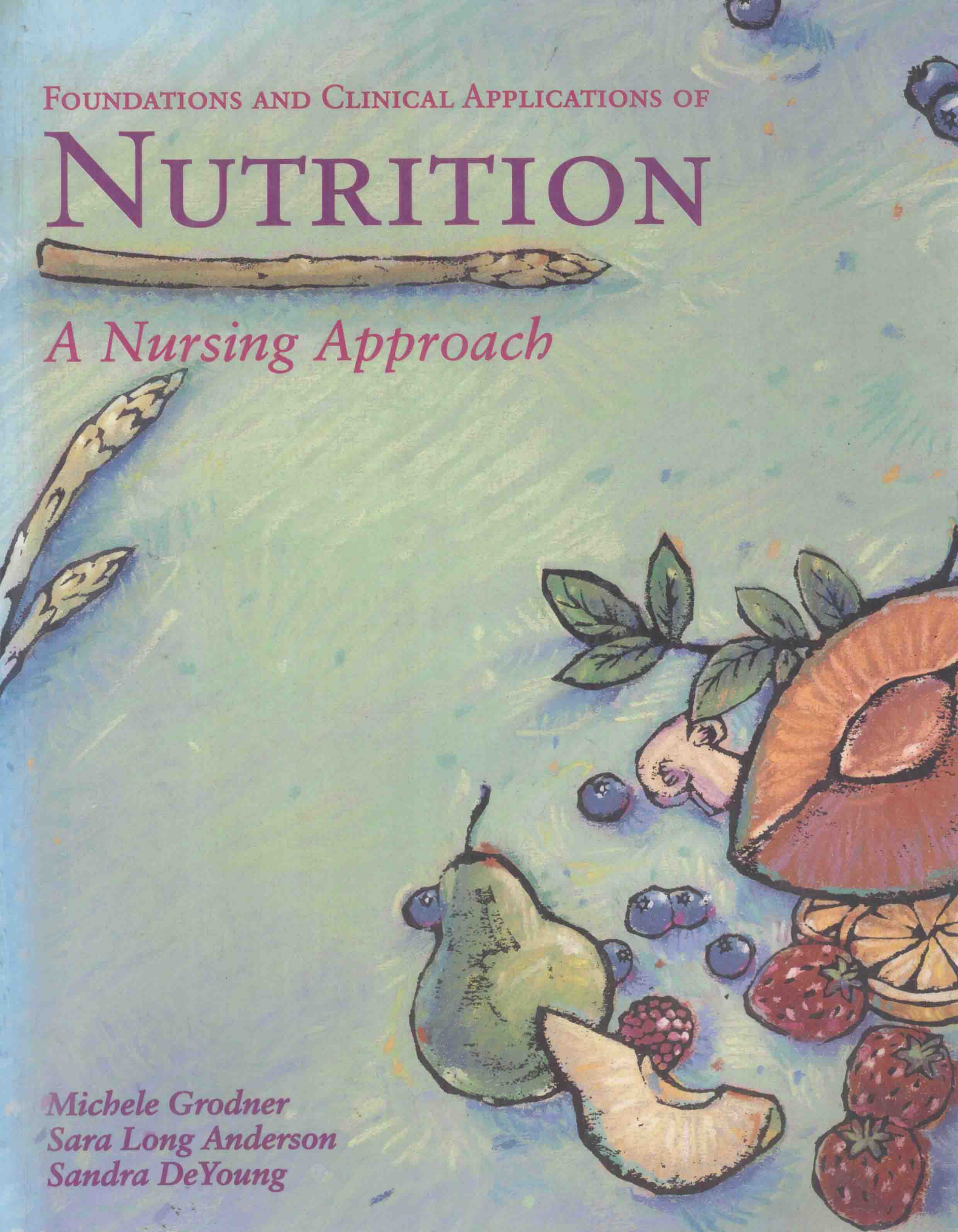


FOUNDATIONS AND CLINICAL APPLICATIONS OF

NUTRITION

A Nursing Approach

Michele Grodner
Sara Long Anderson
Sandra DeYoung





FOUNDATIONS AND CLINICAL APPLICATIONS OF NUTRITION



A Nursing Approach

MICHELE GRODNER, EDD, CHES

Associate Professor and Nutrition Coordinator
Department of Community Health
William Paterson College
Wayne, New Jersey

SARA LONG ANDERSON, PhD, RD

Assistant Professor and Director, Didactic Program in Dietetics,
Department of Animal Science, Food, and Nutrition
Southern Illinois University at Carbondale
Carbondale, Illinois

SANDRA DEYOUNG, PhD, RN

Professor and Chairperson
Department of Nursing
William Paterson College
Wayne, New Jersey

with 181 illustrations

M Mosby

St. Louis Baltimore Boston Carlsbad Chicago Naples New York Philadelphia Portland
London Madrid Mexico City Singapore Sydney Tokyo Toronto Wiesbaden



Dedicated to Publishing Excellence



Publisher: James M. Smith
Senior Acquisitions Editor: Vicki Malinee
Managing Editor: Janet Russell Livingston
Developmental Editor: Terry Eynon
Project Manager: Carol Sullivan Weis
Production Editor: Karen Rehwinkel
Designer: Sheilah Barrett
Manufacturing Supervisor: David Graybill
Cover and Part Opener Illustrations: Viv Eisner Hess

Copyright © 1996 by Mosby-Year Book, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher.

Permission to photocopy or reproduce solely for internal or personal use is permitted for libraries or other users registered with the Copyright Clearance Center, provided that the base fee of \$4.00 per chapter plus \$.10 per page is paid directly to the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collected works, or for resale.

Printed in the United States of America

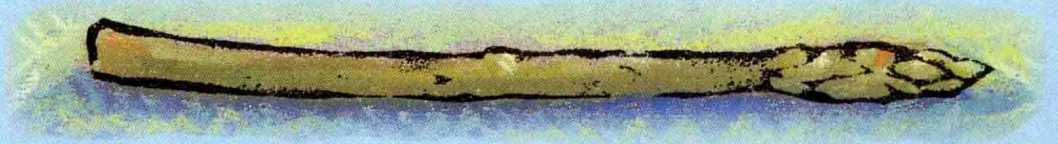
Composition by TSI Graphics.
Printing/Binding by Von Hoffmann Press, Inc.

Mosby-Year Book, Inc.
11830 Westline Industrial Drive
St. Louis, MO 63146

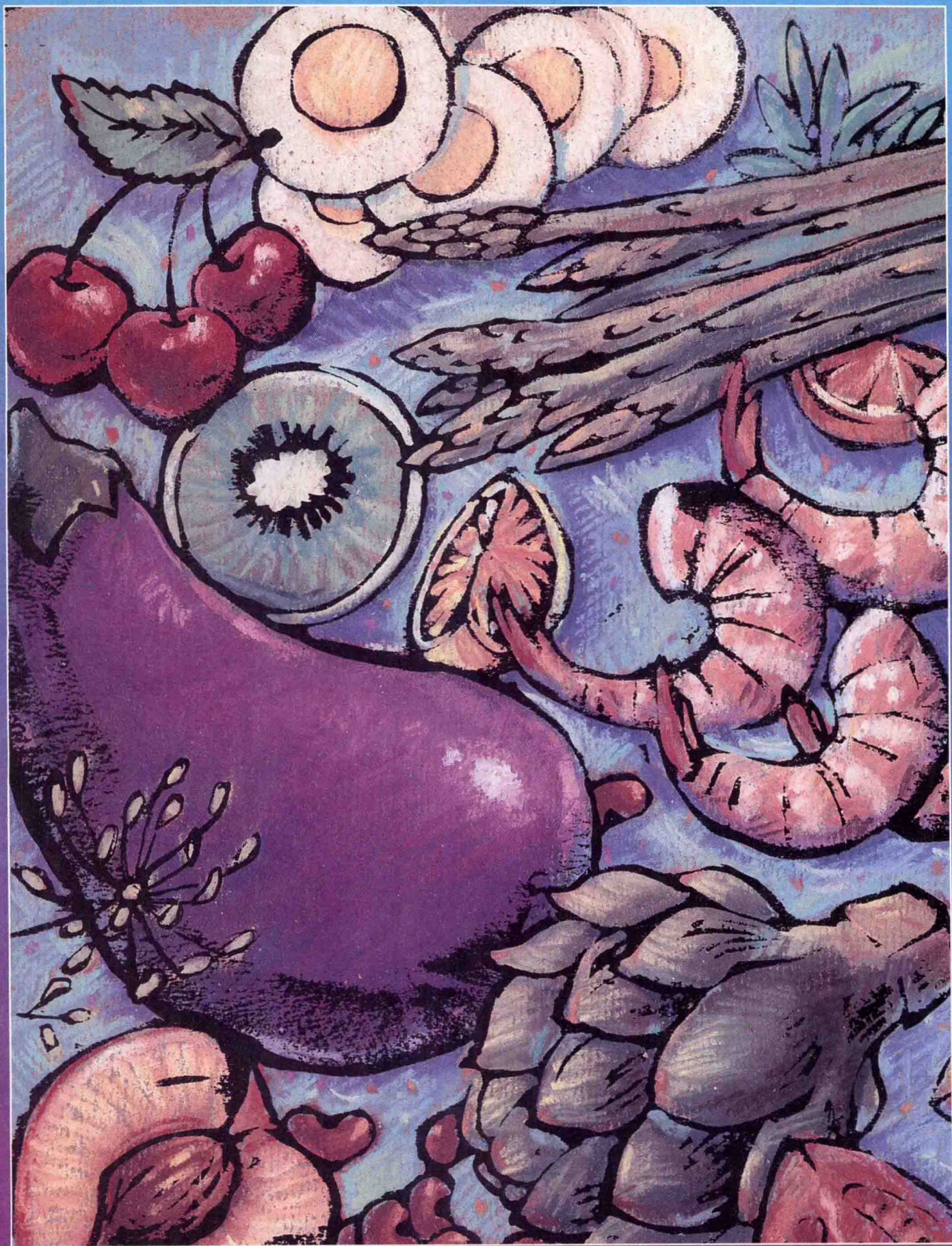
International Standard Book Number 0-8151-4041-X

95 96 97 98 99 / 9 8 7 6 5 4 3 2 1

FOUNDATIONS AND CLINICAL APPLICATIONS OF
NUTRITION



A Nursing Approach



CONTRIBUTORS

Elaine Asp, PhD

Associate Professor,
Department of Food Science and Nutrition,
University of Minnesota, St. Paul, Minnesota

Section on Consumer Food Decision Making in Chapter 2, Personal and Community Nutrition

Sharron Dalton, PhD, RD

Associate Professor,
Department of Nutrition and Food Studies,
New York University, New York, New York

Chapter 5, Fats

Marian L. Stone Neuhouser, BS, RD

Interdisciplinary Program in Nutritional Sciences,
University of Washington, Seattle, Washington

Chapter 11, Life Span Health Promotion: Pregnancy, Lactation, and Infancy

Ellen Parham, PhD, RD

Professor,
Department of Human and Family Resources,
Northern Illinois University, DeKalb, Illinois

Chapter 10, Management of Body Fat Levels

Jaime Ruud, MS, RD

Sports Nutrition Consultant,
International Center for Sports Nutrition, Lincoln, Nebraska

Chapter 9, Energy Supply and Fitness

Bonnie Worthington-Roberts, PhD

Professor,
Interdisciplinary Program in Nutritional Sciences,
University of Washington, Seattle, Washington

Chapter 11, Life Span Health Promotion: Pregnancy, Lactation, and Infancy

To the courageous souls who attempt to cross boundaries to collaborate for the health of us all.

Michele Grodner

To everyone who believes in me.

Sara Long Anderson

To my parents: examples of integrity, hard work, persistence, and love.

Sandra DeYoung

PREFACE

The basis of effective preventive, acute, and rehabilitative health care is collaboration. As we recognize how the physical and psychological dimensions of health are interconnected, we realize that all health professionals need an interdisciplinary understanding of the health needs of both individuals and communities. This interconnection challenges the nursing profession to prepare professionals who are competent and comfortable in clinical institutional settings that serve individuals and their families, as well as in community settings where the focus is on the health status of groups. The nutrition and dietetics profession is challenged to provide other health professionals with an understanding of nutrition that will allow them to support the strategies of successful nutrition intervention.

Foundations and Clinical Applications of Nutrition: A Nursing Approach meets these challenges by bridging the worlds of nursing and nutrition. With a solid background in basic nutrition, nurses will understand the dietary modifications that are designed to maintain and restore health. Consequently, this nutrition text considers wellness from the personal and professional perspective of nurses. Each topic in nutrition is discussed both as it relates to the nurse's individual, personal knowledge and to the professional knowledge nurses need to serve patients and clients in various institutional and community settings. (Reflecting an emphasis on wellness, individuals being cared for by health professionals for health maintenance are referred to as clients. Those who are ill or recuperating from illness are referred to as patients.)

Health care professionals also need to be concerned with their own dietary patterns. Nursing practice demands stamina and well-being. Recognizing the personal nutrition needs of nurses, this book provides a basis of optimum nutrition strategies that can be applied to our lifestyles and those of our families. Client education is a fundamental responsibility of nursing. We can be role models for the positive effects of enhanced nutritional lifestyles as we teach our clients about nutritional wellness.

Nurses interact daily with patients around the issues of food and nutrition. As managed health care and home health services increase nationwide, the role of nurses expands. To highlight the role of nutrition intervention as corollary treatment for clinically diagnosed disorders, the term *medical nutrition therapy* replaces the term *diet therapy*. Nutrition is increasingly recognized as an integral component of health maintenance and rehabilitation. Thus the influence of nurses in the larger community expands, and the importance of reinforcement of nutrition intervention by nurses is highlighted. Medical nutrition therapy provides control while patients are in the hospital setting, but patients need a personal foundation of information to use when they leave the hospital. The overall goal of patient care is to empower patients to take responsibility for their own nutrition status. Patient education provides the lifestyle strategies that enable individuals to develop their own healthful dietary patterns.

AUDIENCE

This book is designed primarily for a nursing audience studying nutrition and medical nutrition therapy. Secondary audiences are health education and health science students. The book is also an ideal reference for nurses, nurse practitioners, and other health care professionals in all manners of health care settings.

Although the book is designed for a one-semester course, it can be adapted for a basic nutrition course, using Part One, Wellness, Nutrition, and the Nursing Role; Part Two, Nutrients, Food, and Health; and Part Three, Health Promotion Through Nutrition and Nursing Practice. Part Four, Overview of Diet Therapy, can then be used as a future reference for medical nutrition therapy.

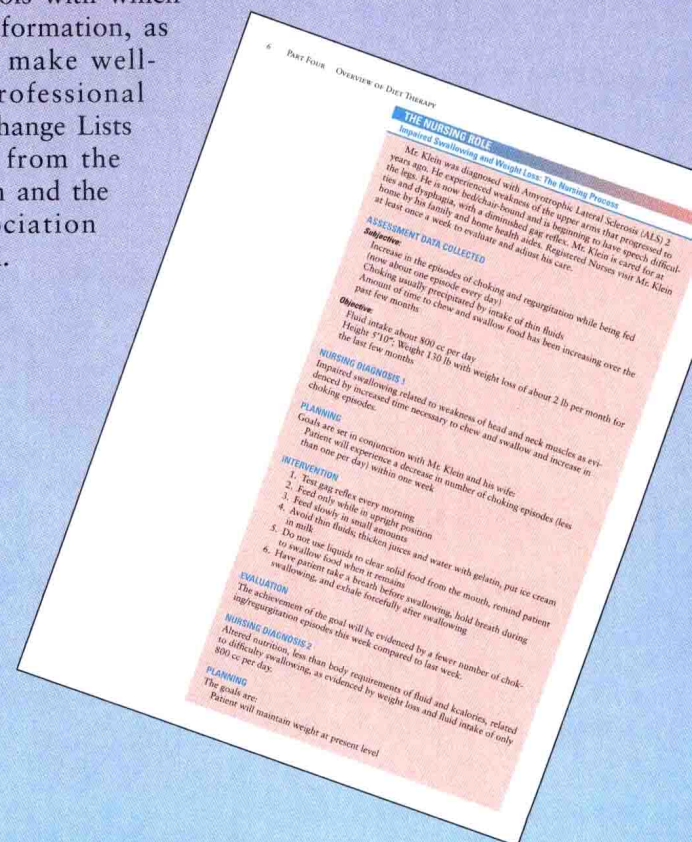
APPROACH


Most nutrition and diet therapy texts attempt to reach several groups, such as nutrition and dietetics majors and nursing students. In contrast, nursing students are the only target audience of this text. This narrowed focus allows us to emphasize the skills applicable to nursing practice. Information needed by dietetics majors but not by nurses is omitted. We recognize that nurses do not prescribe or develop “diets” for patients. Instead, skills essential for nursing professionals if they are to implement and educate patients and clients about prescribed dietary patterns are emphasized.

FEATURES

I*ntegrated nursing content.* Every aspect of nutrition is tied to the nursing experience within a framework of providing holistic patient care to achieve wellness. Carefully constructed boxes on The Nursing Role demonstrate the continual application of the nursing process to each content area. Skill-building is maximized through Teaching Tools and other pedagogical strategies.

Most current dietary recommendations. The latest guidelines and their rationales are included, offering students tools with which to interpret ever-changing information, as well as the competence to make well-informed personal and professional decisions. Updated Food Exchange Lists (1995) and the Renal Diet from the American Dietetic Association and the American Diabetes Association appear in Appendixes B and K.



Lifespan approach. Vital information on age-related variations gives students the background knowledge needed to modify assessments when caring for individuals in varying age groups. Lifespan content is indicated with this special icon  throughout the text.

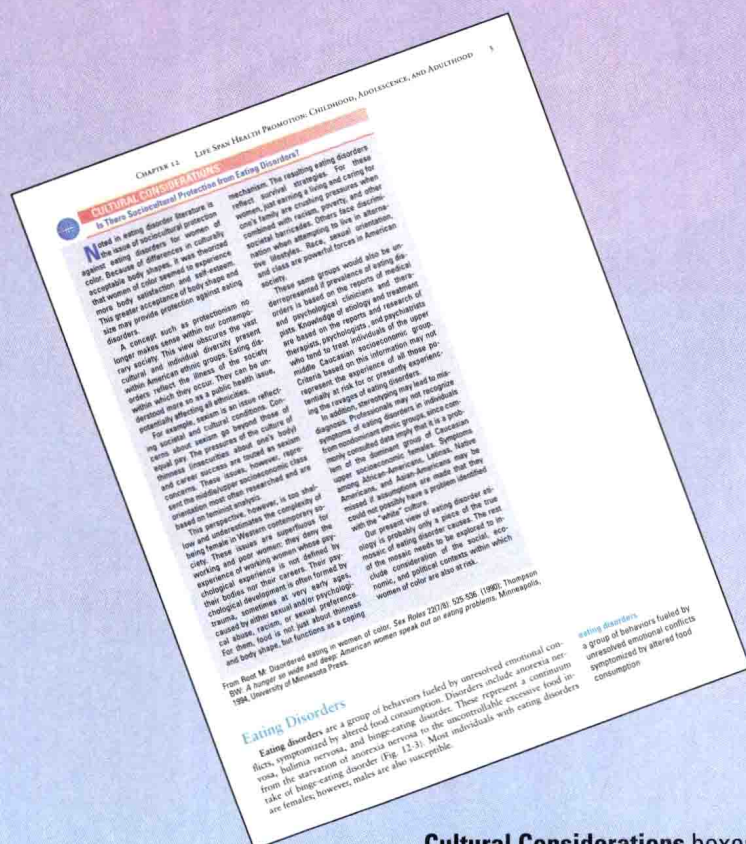
Cultural awareness. Cultural Considerations boxes highlight multicultural issues to help students approach, interview, and assess patients from diverse cultural backgrounds. Appendix M presents cultural dietary patterns of different ethnic groups, allowing nurses to focus on the specific populations with whom they work.

Innovative approach to weight. The chapter on Management of Body Fat Levels emphasizes total fitness and wellness rather than body weight, equipping nurses to educate and care for persons of all sizes.

Conversational writing style. Nutrition is an engaging topic. The writing style of this book reflects the authors' philosophy that serious topics can be presented in a clear, conversational style that can make the study of nutrition enjoyable as well as rewarding.

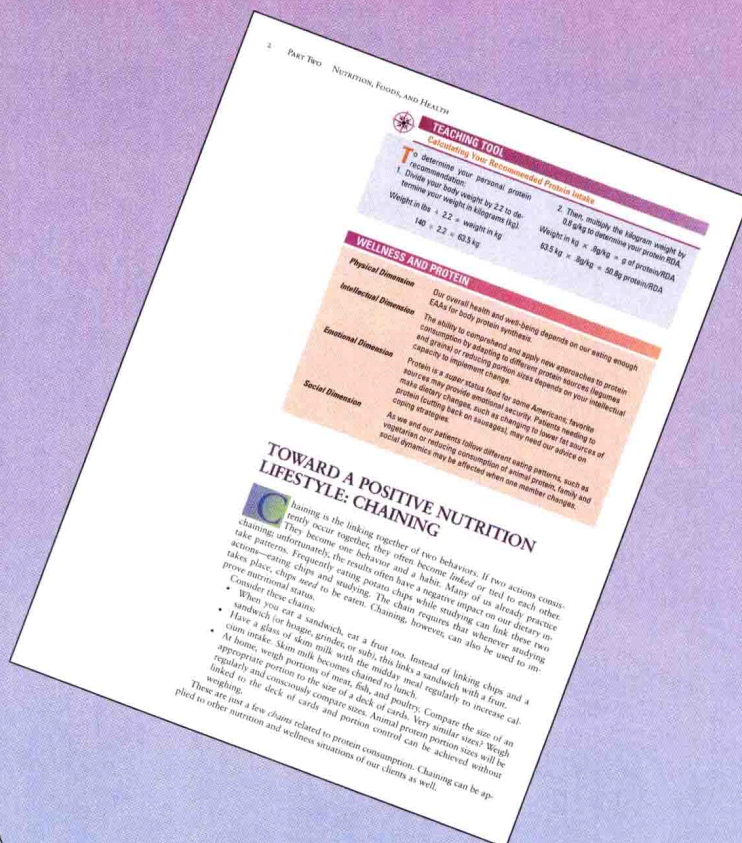
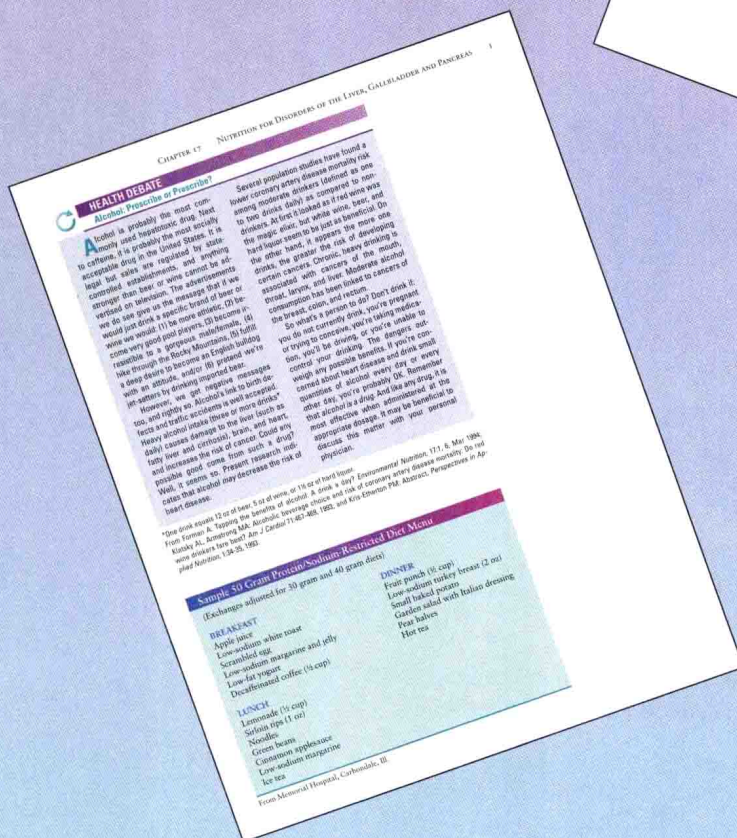
Current food labeling requirements. Practical information on reading and understanding food labels provides applications to promote wellness.

Incorporation of Healthy People 2000. *Healthy People 2000* nutrition priorities, introduced in Chapter 1 and discussed when relevant, integrate personal nutrition goals with national objectives for communities. This framework clarifies how the nutritional status of our communities reflects individual nutritional health.



PEDAGOGY

Supportive learning aids appear in every chapter. Margin definitions of key terms, Wellness and Nutrition charts, chapter summaries, and current references all enhance students' efforts to study more effectively. A comprehensive glossary supports the marginal definitions. Additionally, the following pedagogical features support the text's holistic, interdisciplinary approach to nutrition in nursing settings and present related information in interesting and thought-provoking ways:



Patient education tips. Practical teaching tips in Teaching Tool boxes and margin notes offer students insight into what clients should know or need to be taught, and ways to teach them.

Health Debate boxes. The pros and cons of controversial health issues are presented to help students explore their own opinions on current topics.

Toward a Positive Nutrition Lifestyle section. The psychosocial strategies presented in this section (appearing in Parts I, II, and III), promote self-efficacy in students and their patients.

CHAPTER 16. NUTRITION FOR DISORDERS OF THE GASTROINTESTINAL TRACT 7

THE NURSING ROLE

Impaired Swallowing and Weight Loss: The Nursing Process, *chief* 4

Patient will increase fluid intake to 1200 cc within 2 weeks

INTERVENTION

1. Use custard, gelatin, and liquid nutritional supplements to increase fluid and calorie intake between meals for a total of 3 supplements per day
2. Fluid intake pattern: 300 cc with each meal, the remaining 900 cc between meals and after supper
3. Weigh patient once a week on Mondays at 9 am on chair scale

EVALUATION

The goals will be evaluated to see if the outcomes have been met as evidenced by:
 Record of 1200 cc daily fluid intake after 2 weeks
 Record of 130 lb at each weekly weighing
 As Mr. Karch's condition continues to worsen, reallowing and its accompanying problems may get worse, necessitating nasally suction, or eventually, percutaneous tube insertion.

Clinical Findings

Teresa is a 35-year-old female admitted with microcytic anemia. Her past medical history includes that she underwent a total gastrectomy 2 years ago for the treatment of bleeding ulcers. Upon admission she weighs 120 lb and she is 5'7" tall. She has lost 30 lb since the surgery. She has been taking ferrous sulfate and monthly injections of vitamin B₁₂. Her admission lab data are as follows: hemoglobin 8.0 g/dl; hematocrit 26%; serum albumin 3.7 g/dl. Her typical dietary intake is as follows:

Breakfast
 1 egg scrambled in 1 cup margarine
 1/2 cup cream of wheat with
 1 cup margarine
 1 slice white toast with
 1 cup margarine
 1 black coffee

3 PM
 is bagged with 1/2 cup cream cheese
 or chocolate milk

10 AM
 4 saline crackers
 12 oz can diet cola

Dinner
 1 broiled chicken breast
 is a seasoned broccoli
 1 hot tea with
 artificial sweetener

Lunch
 2 baked chicken wings
 1 cooked carrot
 1 medium boiled red
 potato
 1 medium banana
 12 oz diet lemon-lime
 soda

9 PM
 4 saline crackers
 1 deep potato butter
 1 black coffee

1. What are common nutrition problems found in patients who have gastrectomy? What do these values indicate?
2. Which of these problems were experienced by Teresa?
3. What factors explain her deficiency anemia that develops after a gastrectomy? What is used to treat this anemia?
4. How do Teresa's laboratory values compare with normal values? What do these values indicate?
5. Why is Teresa receiving monthly injections of vitamin B₁₂? Would you advise her to eat more foods high in B₁₂? Explain your response.
6. After reviewing Teresa's usual dietary intake, what food groups and/or nutrients are lacking in her diet?

334 PART THREE HEALTH PROMOTION THROUGH NUTRITION AND NURSING PRACTICE

The effectiveness of the multidisciplinary approach to treatment is due to the recognition that the complex etiology of eating disorders requires the expertise of various health professionals. With the dietitian addressing the food and weight-related behaviors, the psychological team members can focus on the psychological issues while the medical and nursing personnel address the physical ramifications of the disorder.

Role of nurse. Nurses are members of the therapeutic multidisciplinary team along with physicians, psychologists, and dietitians or nutritionists. The therapeutic orientation of nursing care depends on the philosophy or nutritional modalities of individual treatment programs. Although nurses are central to the staffing of inpatient treatment programs, their participation in outpatient programs is marginal. If outpatient treatment programs are available, the philosophy or nutritional and psychological concerns of the patient are integral. Most outpatient treatment tends to be direct care between the client and a health specialist such as a psychologist or dietitian.

Nurses have an educational role in the prevention of eating disorders. By providing information about nutrition and nutritional eating patterns to parents, caregivers and children, healthier feeding relationships can evolve (25). This can help diffuse the behavior of using food as an emotional crutch. Additionally, nurses can be accepting of all body types, asking care to be sensitive to issues of weight and size when providing basic health care. Nurse-client relationships often provide informal opportunities to discuss dietary patterns; if early signs of disordered eating are detected, further discussion or treatment can be initiated before a clinically significant disorder develops.

TOWARD A POSITIVE NUTRITION LIFESTYLE: RATIONALIZING

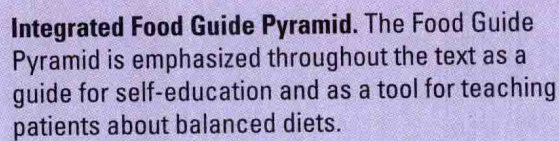
Rationalization is one of the psychological defense mechanisms used to protect our sense of self when we are under stress. When our behaviors, feelings, or perceptions are evaluated as irrational or unacceptable, we may be rationalizing. For example, from adolescents on to ourselves as we get older, we may be rationalizing our eating habits. The list of rationalizations we may use grows as we age (29). Consider the same explanations in a more positive way:

- Not enough time to prepare better meals but can rearrange schedule to create time.
- Lack of knowledge of nutrition or of cooking skills but can take a nutrition or cooking course or read books on nutrition and use simple cookbooks to learn basic skills.
- Instead of continuing negative rationalization, positive rationalization may provide the means to change.

Physical Dimension
Physical health is maintained by beginning health promoting habits early in life and continuing them through adolescence.

Intellectual Dimension
Our intellect provides the ability to change and adjust as circumstances vary according to age and varied responsibilities for our health.

Clinical Applications. Critical thinking skills are enhanced by Clinical Application boxes in all chapters of Part IV, Overview of Diet Therapy. Responding to case study scenarios allows students to synthesize what they've learned by applying their knowledge to actual clinical situations. In addition, certain Nursing Role boxes and Health Debate boxes exercise critical thinking skills. (Answers to the critical thinking questions, including answers for all Clinical Application boxes, appear in the back of the text.)



A complete ancillary package accompanies this text, including an instructor's manual and test bank, a computerized test bank,* and a student study guide, including NCLEX-RN-style questions. Transparency acetates,* as well as a series of videotapes* and videodiscs,* support the text visually. Nutri-Trac diet analysis software allows students to input food intake and physical activities, promoting active learning.

*Available to qualified adopters.

ACKNOWLEDGMENTS



Our appreciation to the contributing authors who offered their unique perspectives on their areas of nutritional expertise: Elaine Asp, PhD; Sharron Dalton, PhD, RD; Marian L. Stone Neuhouser, BS, RD; Ellen Parham, PhD, RD; Jaime Ruud, MS, RD; and Bonnie Worthington-Roberts, PhD.

Our gratitude to the reviewers who considered every nutrition detail and concept from the beginning of Chapter 1 to the last words of Chapter 21. Many of the revisions that strengthen this text reflect reviewers' suggestions.

REVIEWERS

Janet Azar, RN, MNEd
Tidewater Community College
Portsmouth, Virginia

Merilyn Hunter, MS
Garland County Community College
Hot Springs, Arkansas

Janet Keen, RN, MS, CEN, CCRN
Gordon College
Barnsville, Georgia

Linda L. Lilley, RN, MS
Old Dominion University School of Nursing
Norfolk, Virginia

Joan Magee, MS
Henry Ford Community College
Dearborn, Michigan

Bruce Rengers, PhD, RD
University of Northern Colorado
Greeley, Colorado

Nancy Scott
Wenatchee Valley Community College
Wenatchee, Washington

Mary Jane Ward, RN, PhD, FAAN
University of Oklahoma Health Sciences Center
Oklahoma City, Oklahoma

SPECIAL ACKNOWLEDGMENTS

This book has had a long and winding road from conception to realization. Initial thanks to Chris Rodgers, now with Times Mirror, who was sure that there was a text inside of MG before a word was ever written. Our appreciation to the supportive staff at Mosby. Thanks to Jim Smith, Publisher, for overseeing the transition and evolution of this project and to Vicki Malinee, Senior Acquisition Editor, who quickly sensed what was different about the book. Special appreciation to Janet Livingston, our final Managing Editor, who easily took over supervision of this book during its final stages. We are most indebted to Terry Eynon, who switched from our Managing Editor to our Developmental Editor. Her ability to devote her full attention to this text accounts for its smoothness of format and consistency of style. Our joy of sharing life experiences during the development of this book will probably be a one-of-a-kind experience.

Thanks also to Sheilah Barrett, for a beautiful design that enhances the learning experience, and to Carol Sullivan Weis, Project Manager, and Karen Rehwinkel, Production Editor, who guided us quickly and expertly through a complex production process but never lost sight of the importance of details.

Finally, thanks to our friends and especially our families, who endured our late hours, lonely meals, and delayed celebrations. Now no one will need to ask, "Have you finished THAT book yet?"

As authors of this text, we represent a collaboration of expertise in nutrition, education, dietetics, and nursing. As we formulated and implemented this book, we continually asked ourselves: "What do nurses need to know about nutrition? How would they apply this knowledge to their patients and clients?" We hope we have succeeded in answering these questions.

Michele Grodner
Sara Long Anderson
Sandra DeYoung

CONTENTS IN BRIEF

PART I WELLNESS, NUTRITION, AND THE NURSING ROLE, 3

- 1 Wellness Nutrition, 4
- 2 Personal and Community Nutrition, 26
Section on Consumer Food Decision Making
Elaine Asp, PhD

PART II NUTRIENTS, FOOD, AND HEALTH, 55

- 3 Digestion, Absorption, and Metabolism, 56
- 4 Carbohydrates, 76
- 5 Fats, 102
Sharron Dalton, PhD, RD
- 6 Protein, 126
- 7 Vitamins, 150
- 8 Water and Minerals, 178

PART III HEALTH PROMOTION THROUGH NUTRITION AND NURSING PRACTICE, 211

- 9 Energy Supply and Fitness, 212
Jaime Ruud, MS, RD
- 10 Management of Body Fat Levels, 240
Ellen Parham, PhD, RD
- 11 Life Span Health Promotion: Pregnancy, Lactation, and Infancy, 274
Bonnie Worthington-Roberts, PhD
Marian L. Stone Neuhouser, BS, RD
- 12 Life Span Health Promotion: Childhood, Adolescence, and Adulthood, 302

PART IV OVERVIEW OF DIET THERAPY, 339

- 13 Nutrition in Patient Care, 340
- 14 The Care Process: Nutrition Intervention, 362
- 15 Enteral and Parenteral Nutrition, 380
- 16 Nutrition for Disorders of the Gastrointestinal Tract, 410
- 17 Nutrition for Disorders of the Liver, Gallbladder, and Pancreas, 436
- 18 Nutrition for Diabetes Mellitus, 456
- 19 Nutrition for Cardiovascular Diseases, 480
- 20 Nutrition for Diseases of the Kidneys, 502
- 21 Nutrition in Cancer, AIDS, and Other Special Problems, 520