

Nutrition and Diet Therapy



Seventh Edition

Sue Rodwell Williams

Nutrition and Diet Therapy

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To my husband, **Luke**,
minister, helpmate, “my other self”
and to our children,
Jim, Mary, Ruth,
whose constant support and
encouragement never cease to sustain me

PREFACE

From its beginning, through six highly successful editions, this nutrition text has provided a sound basis for student learning and clinical practice in the health profession. It has always maintained a strong research base and person-centered approach to the study and application of nutrition in human health. I have been gratified by the considerable contact I have had with users in colleges, universities, and clinical settings throughout the country and in other parts of the world and cherish their suggestions and expressions of appreciation.

Over the past few years, rapid changes have been occurring in nutrition. New regulations are on the horizon. The science base is expanding. Social problems and structures are changing. Health care systems and practices are changing. Public interest and concern with nutrition and health care are increasing. Nutrition has indeed become more prominent in the marketplace of competing ideas and products. It is a small wonder, then, that all of these changes are apparent in the field of nutrition education and professional practice, since nutrition is fundamentally a very human applied science and art.

This new seventh edition reflects these far-reaching changes. As always, its guiding principle continues to be my own commitment and that of my publisher to the integrity of previous editions. Our expanded goal here is to build on the format introduced in the previous edition and produce this new book, completely updated and rewritten, incorporating design and format with sound content to meet the expectations and changing needs of students, faculty, and practitioners in the health professions.

New to this Edition

With the intent of accommodating the demands of a rapidly developing science and society, I have reorganized and updated a large part of the text and made changes, using input from many professors, students, and clinicians, to increase its usefulness.

New Chapters. I have included three new chapters to help meet current practice needs: Chapter 30, *Nutrition and AIDS*, provides substantial coverage of the disease process and the special nutritional needs of the growing number of AIDS patients worldwide; *En-*

teral Nutrition and *Parenteral Nutrition* are now being covered in two separate chapters, Chapters 21 and 22, respectively. This distinction provides students with more in-depth information on tube feeding and intravenous nutrition support. These new chapters strengthen the application of nutrition science and modern technology to meet the expending needs of practitioners and their clients and patients.

Digestion, Absorption, and Transport. The chapter titled *Digestion, Absorption, and Transport* is now positioned before the energy-yielding macronutrient chapters, allowing students to establish a solid background with regard to basic entry of nutrients into the body before they proceed further to learn how each nutrient then functions within the body.

Energy Balance and Weight Management. We approach energy balance and weight management in a different coordinated way by covering these related topics in one chapter. This approach will help the student understand the fundamentals of energy balance and how they can be applied to weight management.

Disabling Diseases and Rehabilitation. Chapter 32, *Nutrition Support in Disabling Diseases and Rehabilitation*, has been largely rewritten with a new second half to include new developments and current discoveries in the fields of musculoskeletal disease, neuromuscular injury and developmental disease, and progressive neurologic disorders. In each case current knowledge of the disease process and the essential role of nutrition management and rehabilitative care is clarified.

Book Format and Design. The format has been further developed to enhance the book's appeal and encourage its use. A number of four-color illustrations have been added to the following chapters: *Digestion, Absorption, and Transport* (Chapter 2), *Cell Metabolism* (Chapter 6), *Fat-Soluble Vitamins* (Chapter 8), *Water-Soluble Vitamins* (Chapter 9), *Diseases of the Liver, Gallbladder, and Pancreas* (Chapter 25), and *Diseases of the Heart, Blood Vessels, and Lungs* (Chapter 26). The two-color plus four-color design, along with the new two-

column format, makes the text more interesting and easier to handle.

Learning Aids. A number of instructional aids, described in detail later, assist the student and the instructor in the teaching-learning process. These text items will greatly stimulate and facilitate student learning and supply the practitioner with ready clinical reference tools. They apply up-to-date nutrition science to practice needs and a number of current issues and controversies.

New Illustrations. Numerous two- and four-color illustrations—anatomic illustrations, graphic line drawings, and photographs—help the students and the practitioners better understand the concepts and clinical practices presented.

Enhanced Readability and Student Interest. Much attention has been given to directing this seventh edition to the issues of student interest and comprehension. Every effort has been made to enhance its readability and to enliven it stylistically. Great care was also exercised in the selection of all examples, case studies, models, controversial issues, and illustrations in the interest of ensuring maximal relevance.

Learning Aids Within the Text

As indicated, this new edition continues to use many learning aids throughout the text.

Part Openers. To provide a unifying thread for the entire book, each of the four main sections opens with an identifying illustration, which helps keep the broad picture before the student and relates the parts to the whole.

Chapter Openers. To alert students to the topic of each chapter and draw them into its study, each chapter opens with a focusing illustration and preview text.

Chapter Outlines. At the beginning of each chapter, the major sections are indicated by special type for ease in reading comprehension.

Key Terms. Key terms important to the student's understanding and application of the material in patient care are presented in three steps. They are first identified in the body of the text. Some are particularly pertinent and defined on the right-hand side of each right page. And finally, all terms are collected in a comprehensive glossary, with their root meanings, for easy reference at the end of the book. This three-level approach to vocabulary development greatly improves the overall study and use of the text.

Chapter Summaries. To help the student pull the chapter material together again as a whole, each chapter concludes with a summary of the key concepts presented in the chapter and their significance or application. The student can then return to any part of the material for repeated study and clarification as needed.

Review Questions for Testing Comprehension. To help the student understand key parts of the chapter or apply it to patient problems, questions are given at the end of each chapter for review and analysis of the material presented.

Chapter References. A major strength of this book continues to be its updated range of current documentation for topics discussed, drawn from a wide selection of pertinent journals. To provide immediate access to all references cited in the text, a full list of these key references is given at the end of each chapter, rather than collected at the end of the book.

Further Readings. In addition to referenced material in the text, an annotated list of suggestions for further reading for added interest and study is provided at the end of each chapter. These selections extend or apply the material in the text according to student needs or areas of special interest. The annotations themselves improve the student's ability to use them by identifying parts of that reference that are pertinent.

Issues and Answers. A special feature of each chapter is a concluding brief article on nutrition-related issues or controversies based on the text discussion. These interesting and motivating studies help the student see the importance of scientific thinking and develop sound judgment and openness to varied points of view.

Case Studies. In many chapters realistic case studies lead the student to apply the text material to related patient care problems. Each case is accompanied by questions for case analysis. These cases also help alert the student to applications of nutritional therapy for similar patient care needs in their own clinical assignments.

Diet Guides. A variety of diet guides are highlighted in the clinical chapters in Part Four.

Appendices. The revised appendices include a number of materials for use as reference tools and guides in learning and practice.

Food Value Tables. There are a number of food value tables including major nutrient references and ex-

panded material on amino acids, fiber, sodium, potassium, caffeine, and fast foods.

Water and Electrolyte Balance Problems. Diagrams illustrate the answers to clinical questions posed in Chapter 11, *Water and Electrolytes*.

Nutritional Assessment Tools and Standards. Current growth and development charts, height-weight tables, anthropometric percentiles, and standard laboratory values for blood and urine are included.

Calculating Aids and Conversion Tables. Tables and background material are provided on the metric and English systems of measurement, with an interconversion table for the two systems. Also, since most U.S. journals are adopting metric SI units for clinical laboratory values, which presents hematologic and clinical chemistry values in molar concentrations with the liter as the reference volume (for example, mol/L, mmol/L), I have inserted this form of reference where appropriate in the text.

Food Guide: Exchange Lists for Meal Planning. The new revised American Diabetes Association food lists are provided for diet calculations and meal patterns.

Nutritional Management Guides. Current guidelines are provided for nutritional management of cystic fibrosis and food guides for control of renal calculi.

References and Resources. Selected lists are provided for recommended references and nutrition education materials.

Index. I have extensively indexed material throughout the text with constant cross-referencing. In addition, a complete summary index of the entire text includes entries made under a variety of headings and subheadings, enabling the reader to easily locate any topic desired.

Supplementary Materials

Several available supplements enhance the teaching-learning process. Information on these helpful packages may be obtained from the publisher.

Instructor's Manual. Prepared by Joanne Spaide, University of Northern Iowa, this valuable tool features suggested course syllabuses; chapter reviews; behavioral objectives; key terms; chapter outlines with teaching notes on controversial topics; "Nutrition in the News"; additional resources, including slides, films, and filmstrips; transparency masters; and an extensive test-item bank of over 1500 questions.

Test Bank Computer Software. Qualified adopters of this text receive a test bank software package. This software is available in versions for Macintosh, IBM, and Apple computers. These programs provide a unique combination of user-friendly aids and enable the instructor to select, edit, delete, or add questions,

and construct and print tests and answer keys. The Gradebook module handles record-keeping and provides class, test, and individual grade analyses displayed as bar charts. The Proctor module allows instructors to set up student tutorials, using items from the test bank or specially written tests.

Transparency Acetates. Illustrations of important concepts are available in 72 transparency acetates. These useful tools facilitate learning of key concepts discussed in the text.

Mosby Diet Simple 2.0 Software. This interactive nutrient analysis software includes a unique food list with more than 2250 items, selected activities, and food exchange lists. The program allows students to enter food intake and physical activities to determine total caloric intake and energy output over a certain period of time.

A Personal Approach

In the past, users of the text have responded positively to the person-centered approach I have tried to develop. In this new edition I have continued to strengthen this approach.

Personal Writing Style. In rewriting and updating the entire book, I have used a fresh and highly readable personal style to reflect the personal nature of human nutrition and health care and to communicate more directly to the reader. I wish to share my own self and feelings, born of many years of experience in clinical work and teaching, and to create interest and involvement in both learning and sound humanistic practice. In this manner I express my concern for students and their learning, as well as for individuals and clients and their perspectives and needs.

Personal Files. Much of the personal application in these pages is drawn from my personal patient/client files and the many varied clinical and personal problems I have encountered in practice as a clinical nutrition specialist and educator. My patients and students have taught me much of what I have attempted to share with you.

Balanced Behavioral and Physical Science Base. Along with a strong physiologic and biochemical research base for nutrition science and practice, I have tried to use a balancing emphasis on the behavioral sciences and the psychosocial base of nutritional patterns, health care, and health behaviors. These are twin realities of human life which we must constantly deal with in practice.

Practical Application. All the chapters supply expanded practical application of current research in realistic human terms. There are no “pat” answers to many health care problems, and individual situations often require individual solutions. In every case this approach to individualized care is evident throughout, in the many Clinical Application boxes, the text itself, and the illustrations.

Acknowledgements

A textbook of this sort is never the work of one person. It develops into the planned product through the committed hands and hearts of a number of persons. It would be impossible to name all the individuals involved, but several groups deserve special recognition.

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Third, I am indebted to Mosby and the many persons there who had a part in this extensive project. I especially thank the very capable editorial staff, Vicki Malinee and Loren Stevenson, who worked with me throughout the manuscript planning and production. I also thank my Production Editor, Suzanne Fannin, whose capable talents helped shape the book's final pages. To our marketing manager, Cathy Bailey, and the many fine Mosby marketing representatives throughout the country, I owe a great deal for their help in guiding the result of my efforts to its ultimate users. I am also grateful for the help of Production Director, Peggy Fagen, and all the associated artists and photographers who participated in this project.

Fourth, I am very grateful to all those persons who worked with me on my own staff during the various stages of manuscript production, especially to my research assistants, Cindy LeClaire, Mary Herbert, and MaryAnn Lebar who gathered the comprehensive materials I requested. I also owe a special debt of gratitude to my business manager and computer systems analyst, Jim Williams, and to Mary Herbert and Ruth Carroll for their sensitive support.

Fifth, my life has been enriched over the years by my many students, interns, colleagues, clients, and patients; their contributions are revealed in all my work. Each one has taught me something about human experience, and I am grateful for those opportunities for personal growth.

And finally, but most of all, I am grateful for the loving support of my family, who have provided refuge in time of need and shared both my problems and celebrations throughout this work. All these dear persons close to me have stimulated me enormously and have never ceased to share in this family project—“the book”!

Sue Rodwell Williams

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