Metabolic and Bariatric Nursing Practice Analysis: An Update

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Running Title: Bariatric Nursing Practice Analysis Update

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Abstract

Background: As nursing practice and treatment modalities evolve, it is necessary to periodically review, revise, and validate the specific tasks and body of knowledge that defines the practice of nurses working in the specialty of metabolic and bariatric surgery (MBS).

Objectives: To describe the practice analysis process that was conducted to inform revisions and updates to the 2016 specifications of the bariatric nurse certification examination.

Setting: National Certification Program

Methods: Consistent with the practice analysis process and credentialing industry standards, a diverse task force of 18 certified bariatric nurses and a trained psychometrician utilized a mixed-method approach to systematically review and update the specifications of the certification examination. Qualitative methods included a literature review, subject-matter interviews, panel discussion and linkage exercise. A national survey inclusive of 84 task and 87 knowledge statements was updated, distributed, and analyzed to confirm the qualitative data.

Results: 319 fully completed surveys were validated and included in the analysis. Demographics including geographic regions and practice-related variables (e.g., years' experience, education, role, setting) were similar to the 2016 practice analysis. Based on mean ratings, 97.6% of tasks and 100% of knowledge topics were identified as "very important" or "moderately important". Rating reliability estimates demonstrated a high reliability between task/knowledge topics and respondents. Additionally, 95.6% of

respondents reported the survey “adequately” or “completely” covered the important tasks in their bariatric nursing role.

Conclusions: The practice analysis was conducted utilizing a mixed-method approach which included a national survey. This process served to update the content outline and specifications of the bariatric nurse certification examination.

Metabolic and Bariatric Nursing Practice Analysis: An Update

Background:

The mission of the American Society for Metabolic and Bariatric Surgery (ASMBS) is to advance the art and science of metabolic and bariatric surgery (MBS) by continually improving the quality and safety of patient care. In 1996, this led to the identification of the need for specialty certification for nurses working in the MBS field (i.e., bariatric nurses). The purpose of certification is to 1) establish standards in specialty practice that will promote excellence in nursing care, 2) confirm competence in specialty practice, and 3) identify nurses who meet the national standards with a credential [(1)]. There is growing evidence to support a positive association between nursing specialty certification and some patient care outcomes [(2)].

Certification programs utilize a “practice analysis” to describe nurses’ practice in sufficient detail to provide a basis for developing a professional certification examination and to ensure that the content of the examination is “practice-related” [(3)]. A practice analysis includes a mixed-method approach with both qualitative and quantitative data collection to establish content validation [(3)]. Methods can include background research, interviews, panel meetings, job observations, validation surveys and linkage exercises. Each of these methods may provide different levels of specificity in detailing the various practice requirements. Specialty areas typically review their practice analysis every 5 to 7 years [(3)].

The first bariatric nursing practice analysis was completed in 2006 and established the specific set of knowledge, tasks, and skills that distinguish these nurses from those in other specialties [(4)]. This provided the content outline for the initial bariatric

nurse certification examination. In 2016, through a similar process a second practice analysis was conducted to confirm the task and knowledge areas being tested for certification reflected current evidence-based practice. The 2022 practice analysis is now the third analysis since the Certified Bariatric Nurse (CBN) credential was established. It will serve to update the 2016 version.

As recommended by credentialing industry best practice, this practice analysis included a robust mixed-method approach and was conducted under the guidance of a trained psychometrician. One component in conducting a practice analysis is the utilization of a national validation survey to substantiate the qualitative data and determine consensus among respondents on critical aspects of bariatric nursing practice: What proportion of bariatric nurses perform each task? Which tasks are more significant to the bariatric nurse's practice? What proportion of bariatric nurses consider knowledge of each topic to be necessary in their role? Do the identified tasks adequately cover the role of the bariatric nurse?

In summary, the objective of this manuscript is to describe the practice analysis process that was conducted to inform revisions and updates to the 2016 specifications of the bariatric nurse certification examination.

Method:

A subcommittee from CBN leaders was created to direct the practice analysis process. This included a psychometrician from an outside vendor for expert guidance, as identified as best practice in credentialing guidelines [3]. The subcommittee then created a task force from a pool of applicant nurses working directly in the MBS

specialty with careful attention to adequate geographical and practice-related (e.g., years' experience, education, role, setting) representation from across the United States. The final task force was comprised of the psychometrician and 18 certified bariatric nurses with a range of 4-24 years' experience working in the MBS specialty.

Literature Review and Subject-Matter Expert Interviews

The initial responsibility of the task force was to gather and review recently published literature, site-level educational materials specific to MBS specialty, and ASMBS published Clinical Practice Guidelines and Position Statements. Additionally, the psychometrician completed three subject-matter expert interviews with applicants that were not selected to the final task force. The information gathered in this stage was utilized to propose initial revisions to the previously used 2016 CBN practice analysis survey in preparation for survey development.

Panel Discussion and Survey Development

The task force met virtually to develop the national survey that would be used to substantiate the qualitative data obtained by the literature review and subject matter expert interviews. The meeting objectives included:

a) Define the target population/practitioner.
b) Identify the work activities performed (tasks) and knowledge needed to fulfill job responsibilities. These statements needed to be important to the profession, relevant for the next five years, and applicable across work settings and job titles.
c) Identify the grouping of task and knowledge topics required to create the content domains.
d) Determine the survey rating scales.

e) Determine the relevant demographic variables of interest.

f) Integrate new task and knowledge statements, rating scales, and demographics into a survey instrument.

g) Develop a plan for obtaining survey responses.

To identify the work activities performed and knowledge needed, the task force reviewed the list of task and knowledge statements from the last practice analysis conducted in 2016. Task force members utilized current metabolic and bariatric nursing literature, guidelines, standards, and subject-matter expertise to identify any task or knowledge statements which were no longer relevant, as well as those items which needed to be revised or added to reflect updated practice. The final survey listed 84 task statements organized into 6 domains, and 87 knowledge statements organized into 8 categories.

The survey rating scales were selected to identify the importance and frequency for each task and knowledge statement (Table 1). The relevant demographic variables were identified to help the task force evaluate for adequate geographical and practice-related representation to allow for subgroup analysis (Table 2).

Survey Distribution

The psychometrician compiled all the survey elements into online survey software. The draft survey was piloted by the task force members. Comments were reviewed and editorial changes were made to develop a final version. The final survey was directly distributed in March 2022 via an electronic link to 5,299 email addresses within the CBN and ASMBS member databases. A link to the survey was also posted on social media, listed in a monthly electronic newsletter distributed to ASMBS

members, and available in hardcopy format at the 2022 Annual ASMBS meeting. Survey completions were monitored and the link remained active through June 2022, at which point enough survey responses were obtained to conduct the statistical analyses. The subcommittee reviewed the demographics of the survey respondents to ensure the sample was representative before closing the survey.

Survey Analysis

Analysis of the survey results was completed by the psychometrician. To evaluate consistency between statements, coefficient alpha was calculated for the averaged frequency and importance ratings for each task and knowledge statement within a domain. To assess overall consistency between respondents, intraclass correlations were conducted on the task and knowledge statements [5]. All analyses were conducted using IBM SPSS Statistics for Windows (Version 28. Armonk, NY: IBM Corp).

After viewing the overall survey data, the task force reviewed the result averages based on subgroups of the survey respondents' region, years' experience, and primary role. If one of the subgroups had an average of 3.25 (of 5 possible) or less on the combined frequency and importance ratings for a particular task or knowledge statement, that statement was highlighted for discussion with the task force. The task domain weightings were re-evaluated by reviewing the prior practice analysis, input from survey respondents, and discussion from the task force. This resulted in the finalized certification examination specifications.

Linkage Exercise

The subcommittee members completed an intensive exercise to link each of the 84 task statements to applicable knowledge statements. This generated a matrix of 7,308 cells and ensured that every task was paired with at least one applicable knowledge statement and vice versa.

Results:

A total of 1,153 respondents accessed the survey; 832 were excluded due to not fully completing the survey, and 2 were removed due to lack of variance in their responses. A total of 319 valid surveys were analyzed.

Demographic characteristics of survey respondents

All survey respondents indicated they were a current registered nurse in the United States or U.S. Territory. Fifty-five percent reported they were a current CBN (Supplemental Table 1).

By region. The southern region of the United States had the largest number of survey responses with 116 (36.4%). Subsequently, the northeast had 78 (24.5%), Midwest 67 (21%), West 56 (18%), and U.S. Territories 2 (0.6%) (Supplemental Table 2).

Years' experience. Forty percent of survey respondents had 11-20 years' experience working with bariatric surgical patients, followed by 0-5 years (28.8%), 6-10 years (24.1 %), and 21+ years (6.6 %). The mean was 10.9 years.

Primary job role. Approximately 80% of respondents reported their primary role in which they spend the majority of their time as one of these four positions: bariatric coordinator/director/manager with direct patient contact, nurse in office or clinical

setting, nurse on hospital floor caring for bariatric patients, or bariatric coordinator/director/manager without direct patient contact.

Time worked with bariatric surgical patients. The mean time of their job spent was 75% of the time.

Type of facility and procedural volume. Most respondents (65.5%) reported working in a community-based hospital. Approximately 22% of respondents indicated that their facility performed 101-200 bariatric surgical procedures in a typical year, followed by 19% reporting 201-300 and 15% reporting 301-400.

Types of procedures performed. The sleeve gastrectomy procedure was performed in 98.8% of programs. This was followed by Roux-en-Y gastric bypass in 95.3%, revision bariatric surgery in 81.8%, biliopancreatic diversion (with or without duodenal switch) in 31%, adjustable gastric banding in 25.7%, single anastomosis duodeno-ileostomy with sleeve in 21%, and intragastric balloon in 14.1%.

Ratings and Reliability Estimates

Based on mean ratings, 97.6% of tasks and 100% of knowledge topics were identified as “very important” or “moderately important” (Table 3).

Task and respondent rating reliability estimates were used to measure the consistency of ratings within each survey section (e.g., domain). The coefficient alphas between tasks within the six task content domains ranged from 0.94 to 0.98, with a weighted mean of 0.97. The intraclass correlations between respondents for the six task content domains ranged from 0.93 to 0.98, with a weighted mean of 0.97 (Table 4).

The coefficient alphas between knowledge topics within the eight knowledge content domains ranged from 0.91 to 0.96, with a weighted mean of 0.95. The intraclass

correlations between respondents for the eight knowledge content domains ranged from 0.90 to 0.96, with a weighted mean of 0.95 (Table 5).

At the conclusion of the survey, nurses were asked how well the survey covered the important tasks in their role as a bariatric nurse. Over ninety five percent responded "completely" or "adequately" (Table 6a). Finally, respondents were asked to recommend weighting for the six major task domains (Table 6b).

Discussion:

This practice analysis process systematically reviewed and updated the specifications of the 2016 certification examination. Task statements and knowledge topics were revised to reflect changes in the field of MBS nursing practice. The results of the national survey confirmed that the updated task statements and knowledge topics adequately represented current practice.

Demographic characteristics of survey respondents

Data collected on key demographics including geographic regions and practice-related variables (e.g., years' experience, education, role, practice setting) were relatively similar to the previous practice analysis. The sample reflected adequate geographic variability. The geographical representation of the survey remained constant with the southern region of the U.S. having the largest number of respondents at 36.4%. Compared to 2016, we saw a small increase in the Midwest at 21%. As listed in Supplemental Table 2, the percentage of survey respondents per region was very similar to the percentage of centers accredited by the Metabolic and Bariatric Surgery

Accreditation and Quality Improvement Program (MBSAQIP) across the United States, with a nearly identical map of distribution [6].

Various levels of experience were represented in the sample. The mean number of years' experience working in the MBS specialty remained constant at about 10 years. Almost one third of respondents had less than 5 years' experience (Supplemental Table 1), providing important insight into the minimum knowledge and skills needed by nurses working the MBS specialty.

The percentage of nurses with an initial nursing education at the bachelor's level increased from 43.2% to 57.1% reflecting the increasing trend of preparing nurses at the baccalaureate level and an increasing demand for specialized care [7].

Upon closer examination of respondents' primary role, bariatric coordinators with or without direct patient contact remained the largest percentage of respondents at 50%. This dropped from 60% in the previous practice analysis possibly demonstrating increasingly more diverse input from nurses in other areas such as perioperative and educational settings.

Similar to the previous practice analysis, respondents were asked about overall bariatric surgical volume and not about procedure-specific volumes. They were instead asked which procedures were being offered at their facility. Most respondents offered the sleeve gastrectomy and the Roux-en-Y gastric bypass procedure. In 2020, the ASMBS endorsed the single anastomosis duodeno-ileostomy with sleeve (SADI-S) [8]. Although the number of SADI-S performed in 2021 represented only 0.4% of total procedures performed that year [9], 21% of respondents stated that this procedure was being offered at their facility.

Rating and Reliability Estimates

There was a total of 84 tasks and 87 knowledge statements that were thought to best encompass the practice of a bariatric nurse. Our survey results demonstrated the appropriateness of our tasks and knowledge statements. In examining importance and frequency ratings for new 2022 tasks and knowledge statements, all had mean ratings (3-4) of moderately to very important. Overall, importance ratings for task statements remained consistent when comparing 2016 and 2022 survey results. Tasks related to patient education of clinical outcomes changed from being considered “Moderately important” to “Very important”. This could be associated with the MBSAQIP Standard 5.1, “Patient Education Pathways” which focuses on patient education and disclosure of physician procedural volumes and outcomes data [10].

The survey demonstrated excellent reliability between task statements and respondents and between knowledge topics and respondents as evidenced by coefficient alphas and intraclass correlations of greater than 0.90. This high rating reliability estimate indicates that it is highly likely that a different sample of respondents from the same population would have resulted in similar task and topic rating. Lastly, over 95% of respondents reported that the survey “adequately” or “completely” covered the important tasks in their role as bariatric nurses.

Task and Knowledge Statement Updates

Task and knowledge topics added during survey development focused on utilization of person-first language, new care modalities (e.g., telemedicine), patient history (e.g., substance use, pharmacological history), emergence of new procedures (e.g., SADI-S, endoscopic therapy), surgical approaches (e.g., robotic, endoscopic),

awareness of intraoperative nursing care (e.g., positioning, potential complications), medical weight management (pre- and post-operative), and participation in quality improvement. The survey responses and subsequent subgroup analysis validated the revisions to the 2016 practice analysis. None of the 2016 task or knowledge statements were removed. This demonstrates the task and knowledge associated with bariatric nursing have been durable over time and can serve as the foundation for updating the certification examination.

Practice Analysis and Development of Exam Specifications

The results of this practice analysis survey served to verify content validity and specifications of practice which led to the development of an updated certification examination (Appendix). Modifications were made to both the 2016 six major task domains and subsequent weightings after review of the survey results. Due to the relatively low content weighting of the "Outreach" domain, the task force identified that these tasks would be best embedded in the Multi-disciplinary Team Collaboration domain. This domain was renamed to "Professional and Community Collaboration." Slight adjustments were also made to the domain weighting based on input from survey respondents and task force members. The updated domain weighting was as follows: Clinical Management: Pre-operative (Pre-Facility) 21.4%, Clinical Management: Peri-operative (Facility Stay) 25.3%, Clinical Management: Follow-Up (Post-discharge and Long-term) 25.3%, Professional and Community Collaboration 14.7%, and Program Quality 13.3% [11].

Limitations/Survey Response

The practice analysis survey was distributed from March 2022 to end of June 2022 via an electronic link to 5,299 email addresses. 1153 individuals responded to the survey. As per the Institute of Credentialling Excellence Handbook, after data cleaning 834 respondents were excluded from the data set for lack of variance in response or incompleteness [3]. This is an important step to ensure reliability of the data but did lower the number of usable surveys to 319.

As was the case in 2016, we are unable to report on response rates since we have no record of exactly how many survey invitations were delivered. A concerted effort was made to reach as many potential eligible survey participants as possible by emailing through multiple databases and publicly posting the survey link. Email addresses were unable to be cross referenced to remove duplicate or multiple addresses to the same recipient. Despite these obstacles, the representativeness of the sample was validated by secondary analysis of demographic and practice data.

Several factors have been identified as contributing to fluctuations in participant participation. One such factor is participant motivation [12-13]. There was no financial incentive to complete the survey. Additionally, the survey was conducted when healthcare systems were still navigating the effects of COVID-19 pandemic. The far-reaching effects of the pandemic with burnout amongst healthcare providers may have contributed to a lower level of participant/respondent motivation to expend the required energy to complete the survey [14]. In many of the incomplete surveys, the respondents only completed a portion of the demographic section and never actually began the task and knowledge aspects of the survey. An additional factor may be the length of the survey and the time required to complete the survey [12-13]. The estimated time to

complete the survey was 40 minutes. In the next iteration of CBN practice analysis, this may continue to be a challenge given the complexity of bariatric nursing requiring validation of an increasing number of task and knowledge statements. The use of incentives for recruitment and survey completion (e.g., raffle drawings) may be considered to assist with obtaining a larger sample size.

Implications of Specialty Nursing Certification

Nursing certification has shown to be related to lower rates of patient falls, unit-acquired pressure ulcers, hospital acquired infections, complications, failure to rescue, and mortality [15-16]. With nursing professionals spending the greatest amount of time with patients, nurses are in a unique position to influence patient outcomes by use of their clinical knowledge and early intervention. Conducting the practice analysis to establish the bariatric nursing specialty offers an optimal opportunity for further research to examine the relationship of bariatric nursing specialization to patient outcomes.

Nursing certification also has significant implications for nurses and employers alike. Specialty certification has been associated with nurse empowerment, collaboration, and improved recruitment/retention. Nursing certification promotes an ongoing commitment to professional development and lifelong learning [15]. Certification can afford personal and professional growth, validation of nurses' expertise and knowledge, financial rewards and increased marketability and employer recognition. Employers who have developed an organizational culture that promotes staff development and specialty certification can enhance their recruitment efforts, reduce turnover rates, and support their own nursing strategic plans including Magnet® recognition [17].

Conclusions:

The practice analysis was conducted utilizing a mixed-method approach which included a national survey. This process served to update the content outline and specifications of the bariatric nurse certification examination. The high reliability of the survey responses indicates strong generalizability and content validity for the task and knowledge topics developed through the practice analysis. Therefore, it is reasonable to utilize these task and knowledge topics as the foundation for bariatric nursing practice, the certification examination, and for incorporation in academic curricula and research. The final 2022 Updated Certified Bariatric Nurse practice analysis content outline is presented in the Appendix.

Disclosures:

The authors have no commercial associations that might be a conflict of interest in relation to this article.

Appendix:

2022 Certified Bariatric Nurse Practice Analysis and Examination Content Outline

Task Statements

Domain 1: Clinical Management – Pre-operative (Pre-facility), 21.4% (32 questions)

A. Assess a patient/support person(s) knowledge of
    1. disease of obesity and obesity-related conditions
    2. treatment options and alternatives

3. risk and benefits of treatment options

B. Educate a patient/support person(s) about

1. disease of obesity and obesity-related conditions
2. treatment options and alternatives
3. risks and benefits of treatment options

C. Identify risks and unique needs of the patient by reviewing medical, surgical, psychosocial, religious, cultural, family, and weight history

D. Identify unique age-related needs for

1. adolescence (13 to 18 years)
2. geriatric (70 years or over)

E. Identify unique gender-related needs (e.g., pregnancy, fertility, vitamin requirements, transgender considerations)

F. Assist patient/support persons in making an informed decision regarding bariatric treatment options

G. Discuss and establish goals and expected outcomes with the patient/support persons

H. Educate patient/support persons about

1. steps in the bariatric surgical process (preoperative preparation, perioperative, follow-up care)
2. lifestyle changes after surgery (e.g., physical activity, nutrition and supplementation, psychosocial support)
3. expected clinical outcomes
4. short and long-term complications

5. reporting of signs and symptoms of complications
6. measures to prevent complications

I. Evaluate the effectiveness of education for patients/support persons

J. Utilize various modalities while in the perioperative phase (e.g., telehealth visits, telemedicine, patient portals, social media)

Domain 2: Clinical Management – Peri-operative (Facility Stay), 25.3% (38 questions)

A. Assess patient/support person's understanding of pre-operative education and provide reinforcement

B. Utilize size and weight-appropriate equipment

C. Implement patient care protocols (e.g., airway, positioning, medications, pain management, enhanced recovery)

D. Practice safe bariatric patient handling

E. Implement preventative measures for complications

F. Monitor for abnormal signs, symptoms, and diagnostic tests

G. Respond to early and late warning signs for complications

H. Implement discharge plan and review instructions for immediate post-operative period.

1. reporting signs and symptoms of complications
2. nutrition and diet progression
3. physical activity/limitations
4. vitamin and mineral supplementation
5. fluid/hydration management
6. medication management

7. pain management
8. follow-up care

Domain 3: Clinical Management – Follow-up (Post-discharge and long-term), 25.3% (38 questions)

A. Asses the patient for:
    1. short- and long-term complications
    2. short-and long-term weight change
    3. adherence to plan of care and lifestyle changes (e.g., medications, nutrition and vitamin supplementation, diet, physical activity, self-care, smoking cessation)
    4. psychosocial adjustments (e.g., substance abuse, alcohol use, body image)
    5. need for additional bariatric education
B. Evaluate and report improvement, remission, or resolution of obesity-related conditions
C. Assess for quality-of-life changes from pre-operative levels
D. Identify barriers to recommended lifestyle modifications
E. Offer tools or resources to help patients manage barriers to recommended lifestyle modifications
F. Address secondary effects of surgery (e.g., dumping, reactive hypoglycemia, redundant skin)
G. Provide additional education or referrals as needed
H. Reinforce long-term healthy behaviors

I. Encourage participation in support group(s) and other available psychosocial support

J. Utilize various modalities while in the follow-up phase (e.g., telehealth visits, telemedicine, patient portals, social media)

Domain 4: Professional and Community Collaboration, 14.7% (22 questions)

A. Assess the multidisciplinary team's knowledge related to the care of bariatric surgical patients

B. Implement formal and informal multidisciplinary team education related to the unique needs of metabolic and bariatric surgery patients

C. Evaluate the effectiveness of multidisciplinary team education

D. Collaborate with the multidisciplinary team to provide patient-centered education

E. Collaborate with the multidisciplinary team to ensure successful progression of patient through continuum of care

F. Evaluate patient care protocols within the multidisciplinary team

G. Coordinate pre- and post- operative referrals

H. Foster sensitivity within the multidisciplinary team towards patients with obesity

I. Promote understanding of surgical complications within the multidisciplinary team

J. Promote safe patient handling within the multidisciplinary team

K. Provide education to the community on the disease of obesity and associated treatments using various modalities (e.g., web sites, webinars, social media, newsletters, informational presentations)

L. Promote obesity awareness within the healthcare community through educational outreach (e.g., role modeling, precepting, teaching, mentoring)

M. Foster advocacy and access related to individuals and associated treatments

Domain 5: Program Quality, 13.3% (20 questions)

A. Advocate for patient safety involving furniture, patient transport/transfer systems, medical and surgical equipment

B. Integrate the use of bariatric ergonomic protocols to decrease the risk of patient and staff injury

C. Evaluate innovations in technology and advances in care through benchmark studies, literature reviews, evidence-based practice, or research

D. Facilitate incorporation of innovations in technology and advances in care into practice

E. Participate in the quality improvement process including planning, data collection, analysis, implementation, documentation, and evaluation

F. Participate in updating patient care practices (e.g., policies, protocols, clinical pathways)

G. Develop and/or update patient education programs, materials, and tools using multiple modalities

H. Promote compliance with current best practice guidelines and recommendations

I. Promote optimization of the patient experience including sensitivity

J. Identify specific competencies necessary for delivery of patient care (e.g., safe patient handling, early recognition of complications, sensitivity training)

K. Facilitate staff training to optimize the delivery of patient care (e.g., safe patient handling, early recognition of complications, sensitivity training)

L. Contribute to the profession through presentations, publications, research, or involvement of professional organizations

Knowledge Statements

1. *Severe obesity*

A. Epidemiology (trends, incidents, prevalence)

B. Sensitivity issues or weight bias issues (e.g., people-first language)

C. Etiology (e.g., biology, medications, environment, genetics, lifestyle)

D. Obesity related medical conditions

1. endocrine (e.g., Type 2 diabetes, metabolic syndrome, polycystic ovarian syndrome)
2. cardiovascular (e.g., hypertension, dyslipidemia, stroke, cardiovascular disease, congestive heart failure)
3. musculoskeletal (e.g., degenerative joint disease, back pain)
4. gastrointestinal (e.g., gastroesophageal reflux disease, fatty liver disease)
5. pulmonary (e.g., obstructive sleep apnea, asthma, Pickwickian syndrome)
6. urinary/gynecological (e.g., incontinence, infertility)
7. neurological (e.g., pseudotumor cerebri / idiopathic intracranial hypertension)
8. cancer (e.g., breast, uterus, cervix)

E. Normal anatomy and physiology of the gastrointestinal system

F. Physiology and mechanisms of weight loss and weight gain

2. *Considerations for metabolic and bariatric surgery patients*

A. Criteria for metabolic and bariatric surgery candidacy

B. Socioeconomic issues

C. Contraindications for surgery candidacy

D. Age-related considerations (e.g., adolescent, geriatric)

E. Ethnicity, gender, religious, and cultural considerations

F. Patients with high-risk conditions (e.g., severe medical condition, multiple major abdominal surgeries, prior metabolic and bariatric surgeries)

G. Abnormal eating behaviors and disorders

H. Psychological or cognitive disorders (e.g., depression, anxiety, addiction, schizophrenia, obsessive-compulsive disorder, bipolar disorder, brain injury)

I. Substance use (e.g., nicotine, alcohol, marijuana, opioids)

J. Pharmacological history (e.g., non-steroidal, psychiatric medication, immunosuppressants)

3. Metabolic and bariatric surgery procedures

A. Evolution of metabolic and bariatric surgical procedures including historical procedures

B. Types of primary metabolic and bariatric procedures

1. adjustable gastric band
2. sleeve gastrectomy
3. Roux-en-Y gastric bypass
4. biliopancreatic diversion-duodenal switch
5. single anastomosis duodeno-ileostomy with sleeve (SADI/SADI-S)
6. endoscopic therapy (e.g., balloon, stent, aspiration)
7. other emerging procedures, technologies, or treatments

C. Types of non-primary metabolic and bariatric procedures

1. revision
2. conversion
3. reversal

D. Procedure-specific considerations

1. anatomical and physiological changes
2. risks and benefits
3. pre-operative process
4. post-operative process
5. weight change expectations
6. obesity-related disease improvement, remission, and/or resolution
7. secondary effects (e.g., dumping syndrome, hypoglycemia, redundant skin)

E. Surgical/Procedural Approaches

1. open
2. laparoscopic
3. endoscopic
4. robotic-assist

F. Intraoperative process (e.g., draping, positioning, anesthesia, procedure-specific considerations)

4. Surgical complications

A. Types of complications (e.g., bleed, leak, venous thromboembolism, bowel obstruction, internal hernia, stenosis, band complications, gastro-gastric fistula, rhabdomyolysis)

B. Prevention of complications (e.g., venous thromboembolism, pneumonia, pressure injuries/rhabdomyolysis)

C. Intraoperative complications (e.g., loss of airway, intraoperative leak, liver laceration, nerve damage)

D. Clinical presentation of post-operative complications (e.g., early, late, long-term)

E. Treatment of complications

F. Emergency interventions (e.g., rapid response activation, failure to rescue, notification of the surgeon)

G. Unique considerations (e.g., diagnostic testing, risk of nasogastric tube insertion)

5. Patient management across the continuum of care

A. Skin, nail, and hair integrity/care

B. Adequate dentition

C. Fluid and electrolyte management

D. Pain management

E. Laboratory and diagnostic testing and results

F. Medical weight management modalities

1. pre-operative
2. post-operative

G. Bariatric safe patient handling

H. Specialized equipment needs

I. Implications of metabolic and bariatric surgery on

1. fertility and pregnancy
2. alcohol metabolism and effects
3. medication management
4. psychosocial adjustments

J. Discharge planning process

K. Long term follow-up

6. Nutritional considerations

A. Procedure-specific nutrition and supplementation guidelines

B. Types of nutritional deficiencies (e.g., thiamine, Vitamin B12, Vitamin D, fat soluble vitamins, iron, calcium, protein)

C. Prevention of nutritional deficiencies

D. Identification of nutritional deficiencies

E. Treatment of nutritional deficiencies

F. Adaptive and maladaptive eating behaviors and recommendations

G. Dietary progression following surgery

7. Lifestyle changes

A. Physical activity/exercise

B. Behavior-modification counseling

C. Risks of substance use (e.g., nicotine, alcohol, marijuana, opioids)

D. Modalities to improve patient adherence

E. Role of support groups for patients/support persons

8. *Professional Practice*

   A. Fundamental research principles and quality improvement
   B. Risk management
   C. Professional organization and government agency guidelines and recommendations
   D. Informational resources related to the disease of obesity, metabolic and bariatric surgery
   E. Professional associations (e.g., ASMBS, TOS, OAC, SAGES, OMA, ACS)
   F. Metabolic and bariatric surgical program accreditation

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References:

1. Joachim G, Saxe-Braithwaite M, Mass H, Calnan R, Ratsoy B. The current certification model: Does it reflect nursing knowledge? Nursing Leadership 2005;18(1).

2. Coles KM et al. Specialty certification for burn nursing: Value, beliefs and benefits. Journal of Burn Care and Research. 2023;44(5):1169-1175.

3. The Institute for Credentialing Excellence. Certification: The I.C.E. Handbook 3rd Edition. 3rd ed: Omnipress Madison WI; 2020.

4. Berger NK, Carr JJ, Erickson JE, Gourash WF, Muenzen P, Smolenak L, et al. Path to bariatric nurse certification: the practice analysis. Surgery for Obesity & Related Diseases. 2010;6(4):399-407.

5. Dierdorff EK, Wilson MA. A meta-analysis of job analysis reliability. Journal of Applied Psychology. 2003;88(4):635-46.

6. American College of Surgeons Metabolic and Bariatric Surgery Accreditation and Quality improvement Program 2023. *MBSAQIP® Semiannual Report July 2023,* Chicago: American College of Surgeons

7. American Association of Colleges of Nursing. Charting the Future of Academic Nursing: 2021 Annual Report https://www.aacnnursing.org/Portals/42/Publications/Annual-Reports/2021-AACN-Annual-Report.pdf2022.

8. Kallies K, Rogers AM, Committee ftACI. American Society for Metabolic and Bariatric Surgery updated statement on single anastomosis duodenal switch. Surgery for Obesity & Related Diseases. 2020;16:825-30.

9. Clapp B, Ponce P, DeMaria E, Ghanem O, Hutter MM, Kothari S, et al. American Society for Metabolic and Bariatric Surgery 2020 estimate of metabolic and bariatric procedures performed in the United States. Surgery for Obesity & Related Diseases. 2022;18:1134-40.

10. Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program of the American College of Surgery and the American Society for Metabolic and Bariatric Surgery. Optimal Resources for Metabolic and Bariatric Surgery: 2019 Standards - Revised https://www.facs.org/quality-programs/accreditation-and-verification/metabolic-and-bariatric-surgery-accreditation-and-quality-improvement-program/standards/2022.

11. PSI. Practice Analysis Report: American Society for Metabolic and Bariatric Surgery Certified Bariatric Nurse. December 2022.

12. Holtom B, Baruch Y, Aquinis H, Ballinger G. Survey response rates: Trends and a validity assessment framework. Human Relations. 2022;75(8):1560-84.

13. Artino A, Youmans Q, Tuck M. Optimizing Respondent Motivation. Journal of Graduate Medical Education. 2022(December):629 - 33.

14. Sullivan DK, Sullivan V, Weatherspoon D, Frazer C. Comparison of nurse burnout before and during the COVID-19 pandemic. Nurse Clinics of North America. 2022;57:79-99.

15. Halm MA. Specialty Certification: A path to improve outcomes. American Journal of Critical Care. 2021;30:156-60.

16. Boyle DK, Bergguist-Berringer S, Cramer E. Relationship of Wound, Ostomy, and Continence Certified Nurses and healthcare-aquired conditions in acute care hospitals. Journal of Wound, Ostomy, and Continence Nursing. 2017;44(3):283-92.

17. Lal M. Updated Magnet Certification Requirements. Journal of Nursing Administration. 2023;54(1):1-2.

Manuscript Tables

Table 1: Survey Rating Scales

Importance	Rating	Interpretation
How important is this ***knowledge*** to your current roles as a bariatric nurse? How important is this ***task*** to your current roles as a bariatric nurse?	0	Not Relevant
	1	Minimally Important
	2	Somewhat Important
	3	Moderately Important
	4	Very Important
	5	Critically Important

Frequency	Rating	Interpretation
How frequently do you ***use this knowledge*** in the practice of bariatric nursing? How frequently do you ***perform this task*** in the practice of bariatric nursing?	0	Not Relevant
	1	Rarely
	2	Seldom
	3	Occasionally
	4	Frequently
	5	Very Frequently

Table 2: Demographic Variables Collected

- If current, registered nurse in the United States or Puerto Rico
- State or territory where work
- Years of experience working with MBS patients
- If member of ASMBS
- If currently or previously a Certified Bariatric Nurse
- Percentage of work time spent with MBS patients
- Primary job role
- Secondary job roles
- # of MBS procedures performed in typical year
- Procedures performed within the practice/program affiliation
- Type of facility
- Initial level of nursing education/training
- Highest level of nursing education/training
- Gender*
- Age*
- Race/Ethnic Background*

Abbreviations: ASMBS, American Society for Metabolic and Bariatric Surgery; MBS, Metabolic and Bariatric Surgery

*Optional Questions

Table 3: Summary of Mean Importance Ratings*

Importance Value Label	Mean Values Range	Number of Tasks	% of Tasks	Number of Knowledge	% of Knowledge
Very important	3.50 – 5.00	68	80.9%	69	79.3%
Moderately important	2.50 – 3.49	14	16.7%	18	20.7%
Somewhat important	1.00 – 2.49	2	2.4%	0	0%
Total		**84**	**100%**	**87**	**100%**

*Tasks and knowledge statements were grouped into categories based on the average task and knowledge importance rating across all survey respondents.

Table 4: Task and Respondent Rating Reliability Estimates

Task Content Domain	N	Reliability (Consistency)		# of Tasks
		Between Tasks (Coefficient Alpha)	Between Respondents (Intraclass Correlation)	
1. Clinical Management: *Pre-operative (Pre-Facility)*	319	0.98	0.97	22
2. Clinical Management: *Peri-operative (Facility Stay)*	319	0.98	0.98	17
3. Clinical Management: *Follow-Up (Post-discharge and Long-Term)*	319	0.97	0.97	14
4. Multidisciplinary Team Collaboration	319	0.95	0.95	10
5. Outreach	319	0.94	0.93	5
6. Program Quality	319	0.97	0.97	16
Weighted Mean	**319**	**0.97**	**0.97**	**84**

Table 5: Knowledge Topic and Respondent Rating Reliability Estimates

Knowledge Topic Content Domain	N	Reliability (Consistency)		# of Topics
		Between Topics (Coefficient Alpha)	Between Respondents (Intraclass Correlation)	
1. Severe Obesity	319	0.96	0.96	13
2. Considerations for bariatric surgery patients	319	0.96	0.96	10
3. Bariatric surgical procedures	319	0.95	0.94	23
4. Surgical complications	319	0.91	0.90	7
5. Patient management across the continuum	319	0.96	0.95	15
6. Nutritional considerations	319	0.96	0.96	7
7. Lifestyle changes	319	0.95	0.95	5
8. Professional practice	319	0.95	0.95	7
Weighted Mean	**319**	**0.95**	**0.95**	**87**

Table 6: (a) Survey Respondents Content Coverage and (b) Recommended Task Domain Weightings for CBN Examination

Table 6a: Survey Content Coverage		
Question Asked: How well did this survey cover the important tasks for your role as a bariatric nurse?	**n**	**%**
Completely	168	53%
Adequately	137	43%
Inadequately	14	4%
Total	**319**	**100%**

Table 6b: Recommended Task Domain Weightings	
Question Asked: What percentage of a CBN examination should be allocated to each of these areas?	**Average**
Clinical Management: *Pre-operative (Pre-Facility)*	20%
Clinical Management: *Peri-operative (Facility Stay)*	23%
Clinical Management: *Follow-Up (Post-discharge and Long-Term)*	22%
Multidisciplinary Team Collaboration	14%
Outreach	8%
Program Quality	13%
Total	**100%**

Supplemental Materials

Supplemental Table 1: Results of the Demographic and Practice-Related Questions in the Practice Analysis Survey

Supplemental Table 2: Number of Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) Accredited Bariatric Centers by U.S. State/Territory Compared to Number of Survey Respondents

Supplemental Table 1: Results of the Demographic and Practice-Related Questions in the Practice Analysis Survey

1. Are you currently a registered nurse in the United States or Puerto Rico?	n	%
Yes	319	100%
No	0	0%

2. In which state or territory do you work?	n	%
Texas	35	11%
California	25	7.8%
New York	22	6.9%
Pennsylvania	22	6.9%
Florida	16	5%
Illinois	13	4.1%
New Jersey	12	3.8%
Michigan	11	3.5%
Georgia	10	3.1%
Connecticut	9	2.8%
Maryland	9	2.8%
Massachusetts	9	2.8%
Ohio	9	2.8%
Washington	8	2.5%
Oregon	7	2.2%
Tennessee	7	2.2%
Kentucky	6	1.9%
Louisiana	6	1.9%
Indiana	5	1.6%
Minnesota	5	1.6%
Missouri	5	1.6%
Nebraska	5	1.6%
North Carolina	5	1.6%
South Carolina	5	1.6%
Wisconsin	5	1.6%
Colorado	4	1.3%
Rhode Island	4	1.3%
Virginia	4	1.3%
Alabama	3	0.9%
Arkansas	3	0.9%
Kansas	3	0.9%

Mississippi	3	0.9%
Nevada	3	0.9%
New Mexico	3	0.9%
North Dakota	3	0.9%
Oklahoma	3	0.9%
Arizona	2	0.6%
Puerto Rico	2	0.6%
South Dakota	2	0.6%
Utah	2	0.6%
Hawaii	1	0.3%
Iowa	1	0.3%
Montana	1	0.3%
West Virginia	1	0.3%

3. How many years of experience do you have working with bariatric surgical patients?	n	%
0-5 years	92	28.8%
6-10 years	77	24.1%
11-20 years	129	40.4%
21+ years	21	6.6%

4. Are you a member of ASMBS?	n	%
Yes	173	54.2%
No	133	41.7%
Application in process	13	4.1%

5. Are you currently a Certified Bariatric Nurse (CBN)?	n	%
Yes	144	45.1%
No	175	54.9%

6. Have you ever been a CBN?	n	%
Yes	10	5.7%
No	165	94.3%

7. What percentage of your work time is spent working with metabolic and surgical patients?		Mean
		75.3%

8. Which of the following is closest to describing the role in which you spend the greatest majority of your time?	n	%

Bariatric Coordinator/Director/Manager with direct patient contact	132	41.4%
Nurse in office or clinical setting	53	16.6%
Nurse on hospital floor caring for bariatric patients	41	12.9%
Bariatric Coordinator/Director/Manager without direct patient contact	28	8.8%
Nurse working as a Metabolic and Bariatric Surgery Clinical Reviewer (MBSCR)	19	6%
Other, not listed above	16	5%
Nurse in perioperative setting	15	4.7%
Nurse educator	12	3.8%
Nurse working in a quality department	2	0.6%
Nurse working in bariatric industry with minimal direct patient contact	1	0.3%

9. What positions have you held outside of your primary role?		
Select all that apply.	n	%
Nurse on hospital floor caring for bariatric patients	132	41.4%
Nurse in office or clinical setting	92	28.8%
Nurse in perioperative setting	70	21.9%
Nurse educator	63	19.8%
Nurse working as a Metabolic and Bariatric Surgery Clinical Reviewer (MBSCR)	59	18.5%
Other, not listed above	54	16.9%
Bariatric Coordinator/Director/Manager with direct patient contact	52	16.3%
None other than primary	47	14.7%
Nurse working in a quality department	34	10.7%
Bariatric Coordinator/Director/Manager without direct patient contact	17	5.3%

10. How many bariatric surgical procedures does your facility perform in a typical year?	n	%
0-100	41	12.9%
101-200	72	22.6%
201-300	61	19.1%
301-400	48	15.1%
401-500	26	8.2%
Over 500	33	10.3%
Do not know	33	10.3%

Not applicable	5	1.6%

11. Which procedures are done within your program/practice affiliation? Select all that apply.	n	%
Sleeve Gastrectomy	315	98.8%
Roux-en-Y Gastric Bypass	304	95.3%
Revision Bariatric Surgery	261	81.8%
Biliopancreatic Diversion (with or without duodenal switch)	99	31%
Adjustable Gastric Banding	82	25.7%
Single Anastomosis Duodenal-ileostomy with sleeve (SADI-S)	67	21%
Intragastric Balloon	45	14.1%
Other (Please specify)	21	6.6%

12. Which type of facility have you practiced bariatric nursing in? Select all that apply.	n	%
Community-based hospital	209	65.5%
Academic affiliated hospital	95	29.8%
Outpatient clinic	83	26%
Ambulatory surgery center	26	8.2%
Other (please specify)	12	3.8%
Industry	8	2.5%

13. Which of the following best describes your initial nursing education or training?	n	%
Bachelor's degree	182	57.1%
Associate's degree	112	35.1%
Diploma	25	7.8%

14. Which of the following best describes your highest level of nursing education or training?	n	%
Bachelor's degree	164	51.4%
Master's degree	98	30.7%
Associate's degree	40	12.5%
Doctoral degree	15	4.7%
Diploma	2	0.6%

15. What is your gender?	n	%
Female	299	93.7%
Male	17	5.3%

Prefer not to respond	3	0.9%
Other, not listed above	0	0%

16. What is your age?	n	%
21-30	9	3%
31-40	63	20.7%
41-50	75	24.7%
51-60	102	33.6%
61+	53	17.4%
I prefer not to respond	2	0.7%

17. What is your race or ethnic background?	n	%
White	271	85%
Black or African American	18	5.6%
Asian	15	4.7%
Prefer not to respond	13	4.1%
American Indian or Alaskan Native	2	0.6%
Native Hawaiian or Pacific Islander	2	0.6%

18. Are you Hispanic or Latino?	n	%
Yes	20	6.3%
No	290	90.9%
Prefer not to respond	9	2.8%

Supplemental Table 2: Number of Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) Accredited Bariatric Centers by U.S. State/Territory* Compared to Number of Survey Respondents

	# of Centers	# of Survey Respondents
Region: Northeast	**211**	**78**
New York	72	22
Pennsylvania	44	22
New Jersey	32	12
Massachusetts	32	9
Connecticut	16	9
New Hampshire	7	0
Maine	4	0
Rhode Island	3	4
Vermont	1	0
% of total	**23.0%**	**24.5%**
Region: South	**357**	**116**
Texas	89	35
Florida	59	16
Georgia	29	10
North Carolina	26	5
Tennessee	21	7
Virginia	21	4
Maryland	19	9
Kentucky	15	6
Louisiana	15	6
Mississippi	12	3
Alabama	12	3
South Carolina	11	5
Arkansas	8	3
Oklahoma	6	3
Delaware	6	0
Washington DC	5	0
West Virginia	3	1
% of total	**38.9%**	**36.4%**
Region: Midwest	**192**	**67**

Michigan	33	11
Ohio	32	9
Illinois	31	13
Missouri	20	5
Indiana	16	5
Minnesota	16	5
Wisconsin	12	5
Kansas	11	3
Iowa	9	1
Nebraska	6	5
North Dakota	3	3
South Dakota	3	2
% of total	**20.9%**	**21.0%**
Region: West	**155**	**56**
California	68	25
Washington	16	8
Arizona	16	2
Colorado	14	4
Oregon	13	7
Utah	7	2
Nevada	6	3
New Mexico	5	3
Hawaii	3	1
Idaho	3	0
Montana	2	1
Wyoming	1	0
Alaska	1	0
% of total	**17%**	**18%**
Region: U.S. Territory	**2**	**2**
Puerto Rico	2	2
% of total	**0.2%**	**0.6%**

*MBSAQIP July 2023 Semiannual Report