confidential

Certified Geriatric Pharmacist
Job Analysis Summary

Conducted for the

Commission for Certification in Geriatric Pharmacy

Prepared by

Steve Nettles, EdD
Program Director, Psychometrics Department

and

James Hellrung, MA
Research Associate, Psychometrics Department

CERTIFIED GERIATRIC PHARMACIST JOB ANALYSIS

The purpose of the study was to describe the job activities of a Geriatric Pharmacist in sufficient detail to provide a basis for the development of a professional, job-related certification examination. This Job Analysis was conducted in 2012 by Applied Measurement Professionals, Inc. (AMP), at the request of the Commission for Certification in Geriatric Pharmacy (CCGP).

A Job Analysis Committee (JAC) was appointed by CCGP to conduct the activities necessary to identify job responsibilities and develop the test specifications for the Certified Geriatric Pharmacist (CGP) examination. The JAC developed a comprehensive inventory of tasks and knowledge that a Geriatric Pharmacist may perform by brainstorming job related task and knowledge statements, and reviewing the detailed content outline used for the CGP examination. In addition, demographic variables were developed, and a rating scale was selected for use on the survey. After pilot testing, the Job Analysis Survey (JAS) was distributed to approximately 1,860 practitioners nationwide. The returned surveys were analyzed to determine the importance of each task and knowledge statement to a Geriatric Pharmacist.

JAS data were evaluated to determine the degree of consensus among professionals on critical aspects of the job. Data were specifically analyzed to answer the following questions:

1. What percentage of professionals performs each job task?

2. Which tasks and knowledge domains are more significant to the job?

These questions helped identify the more significant job activities from which the content of the examination was specified.

METHODOLOGY

Forming the Job Analysis Committee

The members of Job Analysis Committee (JAC) were appointed by Commission for Certification in Geriatric Pharmacy to create the Job Analysis Survey (JAS), review survey results, determine exclusion criteria, and create the final detailed content outline. The members of the JAC were experienced professionals, all thoroughly familiar with the skills and activities of the profession.

JAC Responsibilities

1. Develop the JAS
   a. provide AMP current information about the job
   b. develop a sampling plan
   c. identify tasks for the survey instrument
   d. determine the survey rating scales
   e. determine the relevant demographic variables of interest
   f. integrate the definition, tasks, rating scales, and demographics into a survey instrument
2. Review the final form of the JAS for completeness, relevance to the profession, appropriate language, and clear instructions

A significant investment of time by the JAC members ensured a successful job analysis study. We are grateful to each of these professionals for their guidance, expertise and devotion to this complex project.

Developing the Job Analysis Survey

Developing the Target Practitioner Definition

The JAC the following target practitioner definition of a Certified Geriatric Pharmacist:

> *A Certified Geriatric Pharmacist (CGP) possesses the expertise to provide pharmaceutical care to older adults. The CGP is knowledgeable in the health care needs of older adults, which includes medication, disease, and wellness management. The CGP is able to effectively communicate this information to the individual, their caregivers, and members of the inter-disciplinary health care team. The overall goal is to maintain or improve functional capacity and quality of life for older adults.*

Developing the Task and Knowledge Lists

With the assistance of AMP project staff, the JAC drafted an inventory containing a comprehensive list of job task and knowledge statements. The task and knowledge lists were drafted from various sources, including previous CCGP CGP test specifications and other descriptions of a Geriatric Pharmacist. The final document consisted of 121 tasks presented in content order, as well as 15 knowledge statements.

Selecting Rating Scales

The JAC also assisted in the selection of the rating scale used in the JAS. The scale was based on similar scales used by AMP in previous national JASs by other professions. A significance scale, including a "not performed" data point, was selected by the JAC to include on the survey for the tasks.

The scale was designed to identify the job activities that are most important to achieving a pharmacist's job objectives. Such information was necessary to demonstrate that the examination measures significant aspects of the job and covers appropriate content. The scales used in the survey are displayed in *Figure 1*.

Tasks:
Considering both frequency and importance, how significant is this activity to Geriatric Pharmacists?

4 = Extremely Significant
3 = Quite Significant
2 = Somewhat Significant
1 = Not Significant
0 = Not performed

Knowledge Statements:
Considering importance: How SIGNIFICANT is the knowledge of the following disease states to the effective performance of a Geriatric Pharmacist?

4 = Extremely Significant
3 = Quite Significant
2 = Somewhat Significant
1 = Not Significant
0 = Not performed

Figure 1. Response Scales Used in the Survey

Selecting Background Information Questions

The Background Information section was designed to gather information about the respondents' demographic characteristics. Demographic questions were used to help the Job Analysis Committee evaluate potential bias in the respondent group. Therefore, the following information about the survey respondents was available:

- Academic degree(s)/training completed
- Certification as a Geriatric Pharmacist
- Post-licensure certifications
- Years as a pharmacist
- Percentage of practice devoted to geriatric pharmacy practice
- Job title
- Type of pharmacy practice
- Primary practice responsibility
- Prescriptive authority
- Location
- Memberships in professional organizations
- Sex
- Race

Location, job title, years as a pharmacist, percentage of practice devoted to geriatric pharmacy, and prescriptive authority were used to identify subgroups for analyses and to describe the sample.

Integrating the Definition, Tasks, Rating Scales, and Demographics into a Survey

Following the first JAC meeting, survey components were compiled into draft form. The draft survey was reviewed by the JAC. The pilot JAS was distributed to all JAC members and a sample of potential participants for review and comment. The purpose of the pilot study was to determine (1) if the directions were clear, (2) if any important tasks were missing from the survey, (3) if the tasks were clearly worded, and (4) if the rating scale was easy to use and understand. CCGP reviewed comments from the pilot study participants. Any needed modifications to the survey were made prior to distribution.

Sample Selection

In an effort to obtain information from respondents who were representative of practitioners, a total of 1,860 geriatric pharmacists were sent an electronic invitation to complete the survey. The invitations were sent by CCGP.

RESULTS

Return Rate and Sample Size

Hyperlinks to a web-based survey were distributed by electronic mail to approximately 1,860 potential respondents. Of the 380 people to start the survey, 259 provided usable responses to be included in the following analyses. This results in a 13.92% usable response rate from those who were sent invitational emails, which is typical for a survey of this type. Responses to the demographic questions indicated that there were sufficient numbers from relevant groups for subsequent analyses. More importantly, the standard error associated with their ratings was near 0.05, indicating sufficient accuracy in the means used by the JAC in their decision-making process (see *Figure 2*). Responses to the demographic questions indicated that there were sufficient numbers from a majority of the relevant groups for subsequent analyses.

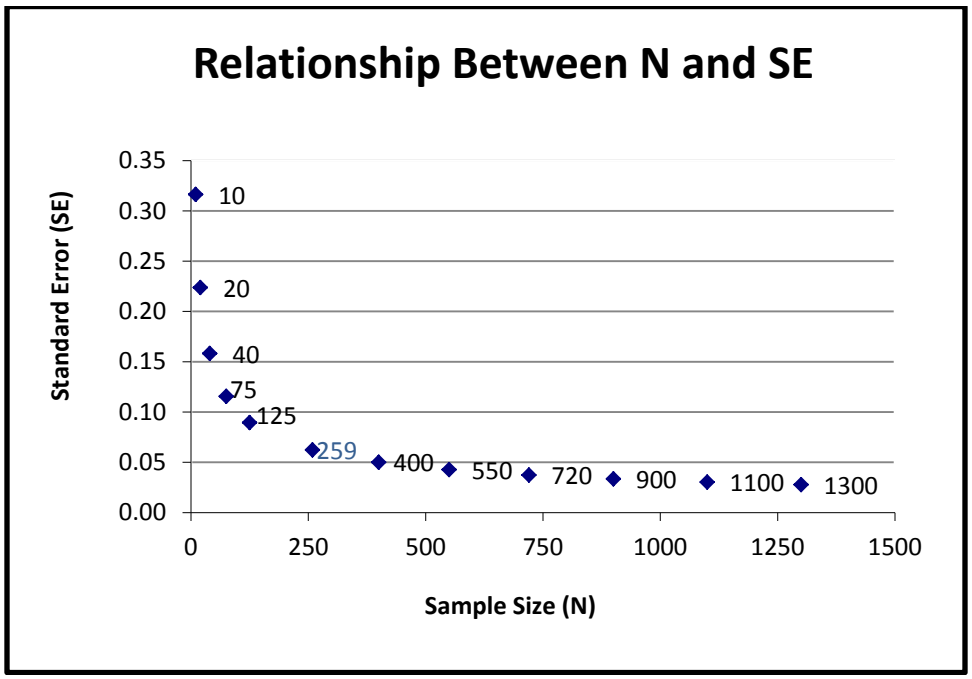


Figure 2. Relationship Between N and SE

Task and Respondent Rating Reliability Estimates

To find the extent to which *tasks* were consistently rated within each survey section, a statistic known as coefficient alpha (Norusis, 1994, p. 204; Hopkins, Stanley & Hopkins, 1990, p. 133-134) was used. Coefficient alpha is an estimate of the amount of error reflected by the scores associated with the instrument. Higher estimate values (e.g., .90 or higher) reflect smaller amounts of error. To determine the extent to which the *respondents* were consistent in rating inventory activities, a statistic known as the intraclass correlation (Guilford, 1956) was used. Separate reliability estimates were calculated for content areas and are displayed in Table 1. Since a maximum reliability coefficient is represented by a value of 1.00 and the total reliability

estimates for the whole task list were 0.98 (alpha and intraclass); the respondents' task ratings were considered highly reliable. Based on these data, it is very likely that a different sample from the same population would have produced similar task ratings.

Table 1. Task and Respondent Rating Reliability Estimates

Survey Section	Number of Statements	Reliability (consistency)	
		Between Tasks (Coefficient Alpha)	Between Respondents (Intraclass)
1. General Principles of Aging	35	0.96	0.98
2. General Principles of Caring for Older Adults	59	0.97	0.99
3. Population Specific Activities	27	0.97	0.99
4. Knowledge	15	0.92	0.99
Weighted Grand Means		0.98	0.98
Total Statements	**136**		

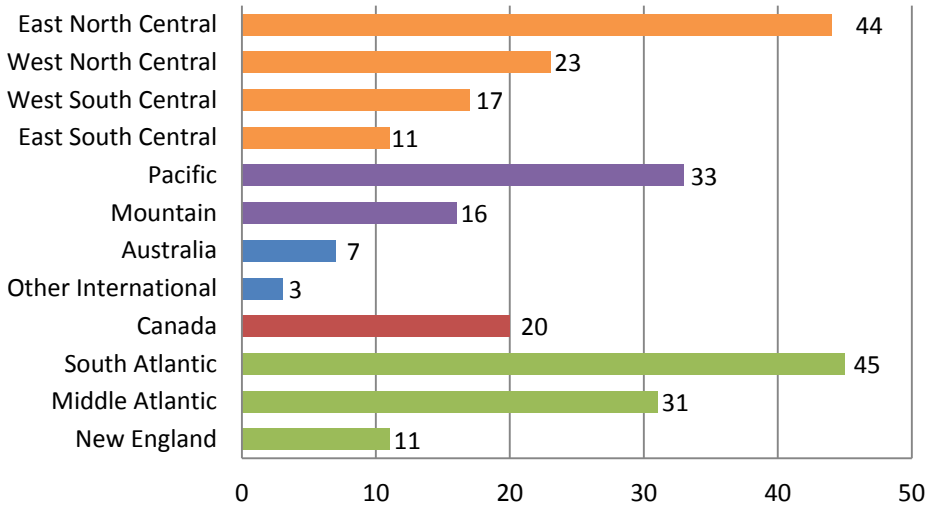
Demographic Analyses

Figures 3-13 present background information collected from the respondents. These demographic data helped describe the sample.

A typical respondent is described below:

- Works in the south Atlantic region of the United States of America
- Practiced as a Pharmacist for 11 to 30 years
- Has obtained a Bachelor's degree
- Practices as a Clinical Pharmacist in a Clinical Practice setting
- Works in a full service restaurants
- Devotes 100% of his or her practice to geriatric practice
- Does not possess prescriptive authority
- Female, non-Hispanic or Latino White

Country/ Region of Practice:



East North Central: IL, IN, MI, OH, WI
West North Central: IA, KS, MN, MO, NE, ND, SD
West South Central: AR, LA, OK, TX
East South Central: AL, KY, MS, TN
Pacific: AK, CA, HI, OR, WA
Mountain: AZ, CO, ID, MT, NV, NM, UT, WY
Other International: Hong Kong, Puerto Rico, Singapore
South Atlantic: DE, DC, FL, GA, MD, NC, SC, VA, WV
Middle Atlantic: NJ, NY, PA
New England: CT, MA, ME, NH, RI, VT

Figure 3. Location

Respondents were asked to indicate the location of facility or organization in which they work. As shown in *Figure 3,* the largest group of respondents (45 respondents, 17.24%) works in the South Atlantic Region of the United States of America. These responses were then grouped for a more comprehendible analysis. As shown in *Figure 4,* the largest group of respondents (95 respondents, 36.40%) works in the Central US Region.

Country/ Region of Practice (grouped):

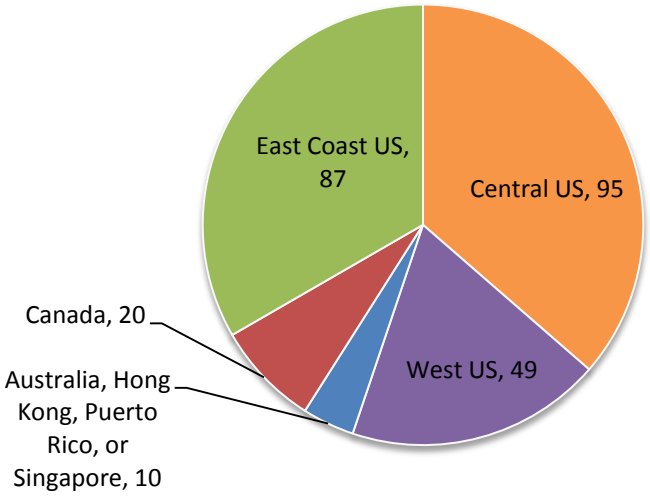


Figure 4. Location

Race:

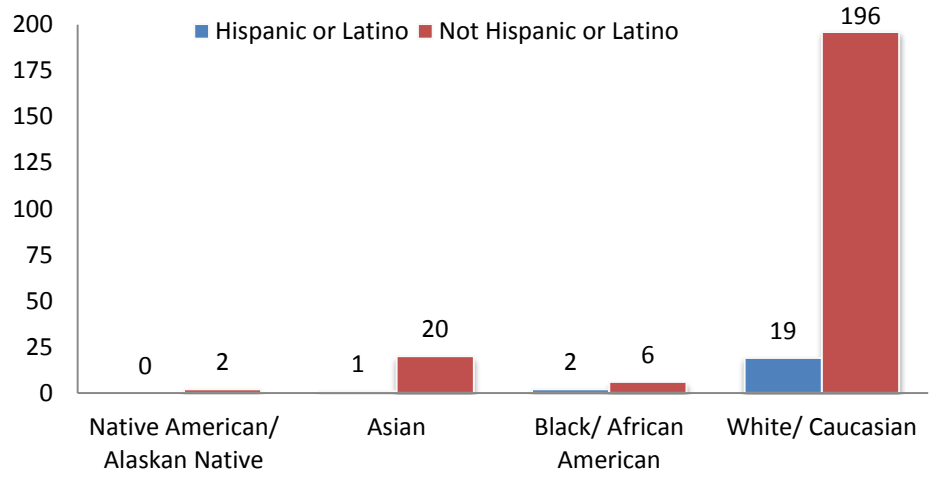


Figure 5. Race Distribution

As shown in *Figure 5*, 196 of the respondents indicated that they are White/ Caucasian - Not Hispanic or Latino.

Sex:

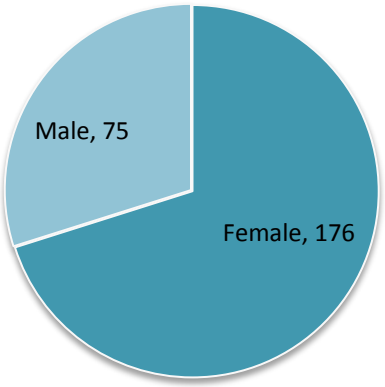


Figure 6. Sex

Respondents were asked to indicate his or her sex. *Figure 6* shows 176 of the respondents (70.12%) are female.

Do You Have Prescriptive Authority?

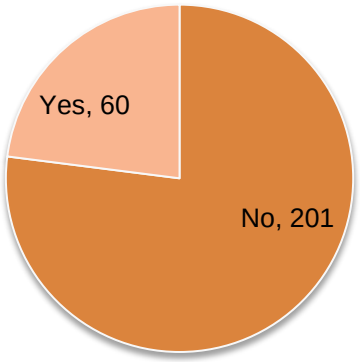
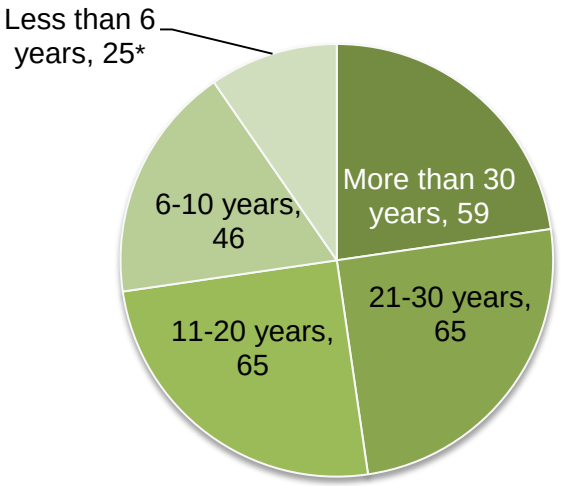


Figure 7. Respondents' Prescriptive Authority

As shown in *Figure 7*, 201 (77.01%) of the respondents indicated that they do not have prescriptive authority.

Number of Years as Pharmacist:



*1 respondent indicated less than 2 years

Figure 8. Years of Experience as a Certified Geriatric Pharmacist

As shown in *Figure 8*, a majority of respondents indicated they had been a pharmacist for either 11-20 years or 21-30 years. Each group contained 65 respondents (25%).

Primary Job Title:

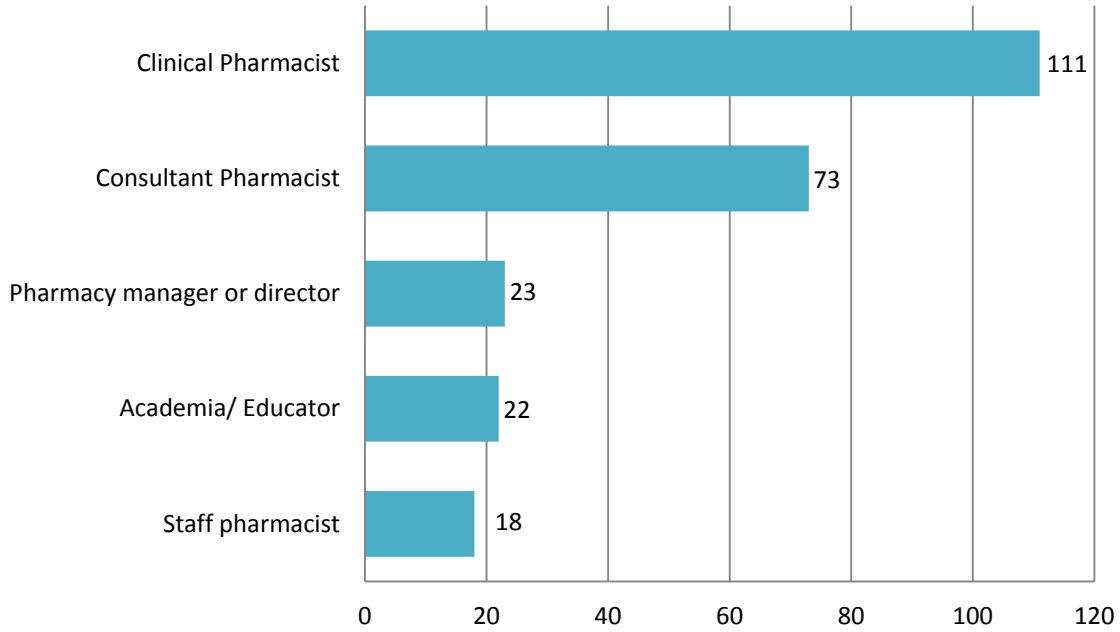


Figure 9. Type of Work Setting

As shown in *Figure 9*, 111 respondents (44.94%) indicated their primary job title is Clinical Pharmacist.

Primary Practice Responsibility:

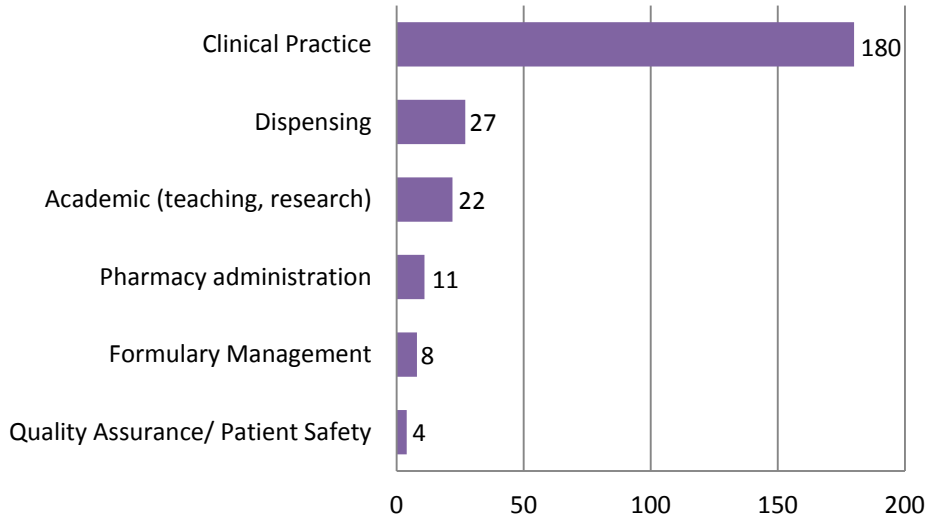


Figure 10. Number of Employees Working in Unit

Figure 10 shows the primary practice responsibility of survey respondents. One hundred eighty (180) respondents (71.43%) reported a primary practice responsibility of Clinical Practice.

Academic Degree(s)/Training Completed:

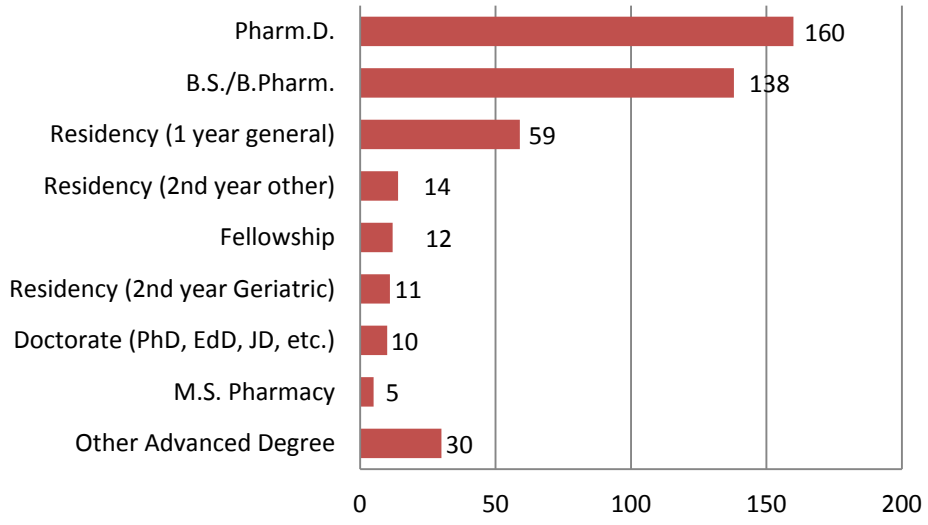


Figure 11. Number of Employees Managed at Job

Respondent were asked to indicate the different Academic Degree(s) and training that they have completed. *Figure 11* shows that 160 respondents have completed a Pharm.D.

Percentage of Practice Devoted to Geriatric Pharmacy Practice:

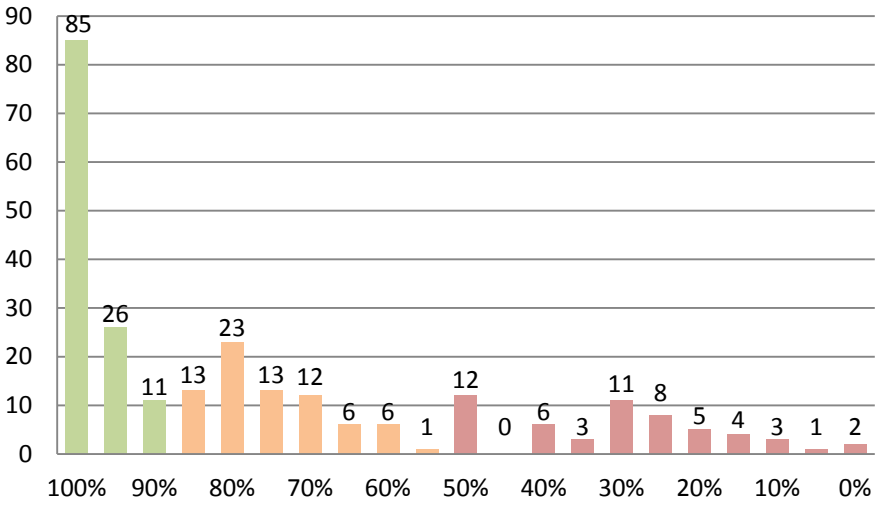


Figure 12. Percentage of Practice Devoted to Geriatric Pharmacy Practice

Respondents were asked to indicate the percentage of their practice that they devote to geriatric pharmacy. As shown in *Figure 12*, the largest group of the respondents (85, 33.86%) indicated that they devote 100% of their practice to geriatric pharmacy. These responses were then grouped for a more comprehendible analysis. As shown in *Figure 13,* the majority of respondents (122 respondents, 48.61%) devote 90-100% of their practice to geriatric pharmacy.

Percentage of Practice Devoted to Geriatric Pharmacy Practice (grouped):

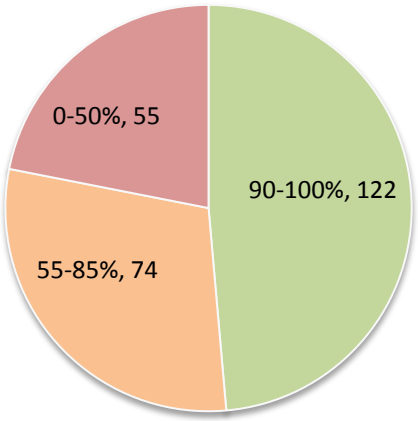


Figure 13. Percentage of Practice Devoted to Geriatric Pharmacy Practice (grouped)

Mean Task Ratings and Percent Performing

To determine which tasks were more significant and performed by respondents, descriptive data were calculated for each task. Additionally, for each task the frequency of those who selected each significance rating was calculated. The purpose of these data was to determine which tasks would remain on the final content outline.

For example, task 1 (Recognize the spectrum of aging from healthy aging to frailty) had a mean significance rating of 3.26. One (0.32%) of the respondents provided a "not performed" or "0" rating for the task.

Table 2. Summary of Mean Significance Task and Knowledge Statement Ratings

Significance Value Label	Mean Values Range	Frequency	Percent
Extremely Significant	3.50 – 4.00	35	25.74%
Quite Significant	2.50 – 3.49	101	74.26%
Somewhat Significant	1.50 – 2.49	0	0%
Not Significant	1.00 – 1.49	0	0%
	Total	**136**	**100%**

The significance scale had values ranging from 1 (Not Significant) to 4 (Extremely Significant). A summary of the ratings for the significance scale for task ratings is shown in Table 2. None of the average task or knowledge ratings were rated as somewhat significant or not significant. All the task and knowledge were rated "Extremely" or "Quite Significant" on average by respondents (mean significance ratings between 2.54 and 3.87).

The Job Analysis Committee (JAC) reviewed the data for each task. They concluded that the ratings obtained from the Job Analysis Survey (JAS) were in agreement with their judgments about the job. Consequently, the JAC also concluded that the JAS data adequately defined the

profession on a national basis. Moreover, the JAC judged the results sufficient for the purpose of delineating the structure and content of a national certification examination.

The Review Committee was encouraged to consider how best to limit the content eligible for the test specifications to only the broadly performed and significant tasks. Therefore, the Committee adopted 7 decision rules to identify tasks *ineligible* for assessment.

Making Decision Rules Operational

Having judged that the sample sufficiently represented the population, the Job Analysis Committee (JAC) applied the following criteria to implement its decision rules regarding the appropriate Task and knowledge statements (task and knowledge statements) for the position of Certified Geriatric Pharmacist.

Rule 1. **Keep only tasks performed by 88% or more of respondents.**
Tasks with "not performed" rating frequencies of more than 12% were considered ineligible. Applying this rule did not eliminate any task or knowledge statements.

Rule 2. **Keep only Task and knowledge statements rated at least Quite Significant (2.50) by respondents.**
Tasks with a mean rating of less than 2.5 are considered ineligible. Applying this rule did not eliminate any task or knowledge statements.

Rule 3. **Keep only Task and knowledge statements rated at least Quite Significant (2.50) by all of the region subgroups.**
Realizing that error occurs in every measurement, the JAC defined the lower boundary of Quite Significant as a mean rating of 2.50 for tasks. They examined task and knowledge statements within a 95% confidence interval (2.5 $\pm$ 2* standard errors of .09) for inclusion. Applying this subgroup threshold eliminated one task.

Rule 4. **Keep only task and knowledge statements rated at least Quite Significant (2.50) by both of the relevant job title subgroups (Clinical Pharmacist and Consultant Pharmacist).**
The JAC determined that only Clinical Pharmacists and Consultant Pharmacists should be compared. All of the other subgroups (Academia/Educator, Pharmacy manager or Director, Staff Pharmacist, and Other) were deemed to have too few respondents for a proper analysis. Applying this subgroup threshold did not eliminate any task or knowledge statements.

Rule 5. **Keep only task and knowledge statements rated at least Quite Significant (2.50) by all of the experience subgroups (Less than 6 years, 6 to 10 years, 11 to 20 years, 21 to 30 years, and More than 30 years).**
The JAC examined task and knowledge statements ratings by type of organization and defined a mean significance rating of 2.50 for task and knowledge statements in all subgroups as the criteria. Applying this subgroup threshold did not eliminate any task and knowledge statements.

Rule 6. **Keep only task and knowledge statements rated at least Quite Significant (2.50) by two of three of the "percent of practice" subgroups (90-100%, 55-85%, 0-50%).**
Applying this rule eliminated one task.

Rule 7. **Keep only task and knowledge statements rated at least Quite Significant (2.50) by both of the prescriptive authority subgroups (yes, and no).**
The JAC examined task and knowledge statements ratings by type of organization and defined a mean significance rating of 2.50 for task and knowledge statements in all subgroups as the criteria. Applying this subgroup threshold did not eliminate any task and knowledge statements.

After all decision rules were applied, the JAC reviewed and considered all respondent comments. Table 3 presents information used by the JAC to determine the number of items for each of the major areas of practice. The goal was to distribute items in accordance with observed working patterns across the major content areas. Respondent data was used to suggest a starting point for the content experts. The Committee discussed the respondents' recommendations and considered their own opinions as how the items should be distributed. The Committee decided to start with the respondent's recommendations for the major categories, and make adjustments based on their expert opinion.

Table 3. Respondent Allocation of Examination Items
Consider the significance of each section on the task list. What percentage would you allocate to each of the following areas on the Geriatric Pharmacist exam?

	N	Minimum	Maximum	Mean	Std. Deviation
I. General Principles of Aging	245	10	85	36.38	16.74
II. General Principles of Caring	245	5	85	29.59	14.76
III. Population Specific Activities	245	0	80	34.03	17.64

Cognitive Complexity

After the number of items was determined for each major domain, the next step involved defining the cognitive complexity of the content domain. A complexity scale was used to determine at what cognitive level individual tasks were performed. The information provided a basis for matching test item complexity to job complexity. The Job Analysis Committee (JAC) discussed each task in each section and considered the typical complexity of task performance using the descriptions described in Table 4. They then determined a distribution for each major category by the cognitive categories of recall, application, and analysis, using Table 5 as a guideline. The Committee then finalized the exact distribution based on its experience and perceptions about each major content domain.

Section and task complexity is based on Bloom's *Taxonomy of Educational Objectives* (1956, pp. 201-207) and follows:

Table 4. Cognitive Complexity Scale

Recall	Requires only the identification, recall, or recognition of isolated information, such as specific facts, generalizations, concepts, principles, or procedures. The information generally does not vary relative to the situation.
Application	Requires comprehension, interpretation, or manipulation of limited concepts or data, in which the response or outcome is situationally dependent, but not overly complex (e.g., application of knowledge which varies based on patient characteristics and environment). Activities that require candidates to recognize elements and relationships among data and to classify, explain, or differentiate are usually application level.
Analysis	Requires the integration or synthesis of a variety of concepts or elements to solve a specific problem situation (e.g., evaluating and rendering judgments on complex problems with many situational variables).

Table 5. General Guidelines for Item Distribution by Cognitive Level based on Mean Cognitive Level by Major Content Domain

	<1.45	<2.05	<2.45	>2.449
Recall	100%	40%	20%	20%
Application	0%	60%	60%	20%
Analysis	0%	0%	20%	60%

Test Specifications

The Job Analysis Committee reviewed tasks that remained eligible for the examination, cognitive levels, and the number of items in each category to develop the final detailed content outline. The final test specifications are shown in Table 6. Test developers, item writers, and the Examination Committee will use the test specifications and detailed content outline to build future forms of the examination.

Table 6. Certified Geriatric Pharmacist Test Specifications

Content Area	Cognitive Level			Total
	Recall	Application	Analysis	
1. General Principles of Aging	8	26	4	**38**
2. General Principles of Caring for Older Adults	14	32	44	**90**
3. Population Specific Activities	2	11	9	**22**
Total	**24**	**69**	**57**	**150**

Knowledge Linking

The Job Analysis Committee (JAC) reviewed the 15 knowledge statements. The JAC then determined the knowledge statements should be used in content area 2: General Principles of Caring for Older Adults. The JAC assigned three groups to the disease states: “High”, “Medium”, and “Low”. The knowledge statements in the “High” group are to receive 60% of the questions in section 2. The knowledge statements in the “Medium” group are to receive 35% of the questions in section 2. Finally, the knowledge statements in the “Low” group are to receive 5% of the questions in section 2.

CONCLUSIONS

The Job Analysis described in this report was undertaken to provide evidence supporting content valid inferences from examination scores. The study was conducted to determine and comprehensively describe the job of a Geriatric Pharmacist, to evaluate this description through the ratings of job experts, and to define areas that should be assessed in this examination.

The Commission for Certification in Geriatric Pharmacy project team formed the Job Analysis Committee (JAC), who prepared a comprehensive list of tasks describing the job. A representative sample of job experts completed the survey. The JAC appointed by the Commission for Certification in Geriatric Pharmacy project team reviewed the survey results and used the survey ratings to develop test specifications directly related to the significant tasks that target Geriatric Pharmacists perform. These test specifications will be used to ensure the examination is current and job-related. Each future form of the examination will contain the specified number of items distributed across the content areas. Because each test form will be developed to match these job-related test specifications, valid content-related inferences can be drawn about candidates' abilities to perform the job of a Geriatric Pharmacist.

REFERENCES

Bloom, B. (Ed.) (1956). Taxonomy of Educational Objectives, Handbook I*: The Cognitive Domain*. New York: David McKay Company, Inc.

Guilford, J. P. (1978). *Fundamental Statistics in Psychology and Education.* New York: McGraw Hill.

Hopkins, K.D., Stanley, J.C., Hopkins, B.R. (1990). Educational and Psychological Measurement and Evaluation, (7th edition). New Jersey: Prentice Hall.

Norusis, M. J. (2011). SPSS Professional Statistics 19. Chicago: SPSS

Applied Measurement Professionals, Inc.

18000 W. 105th Street

Olathe, Kansas 66061.7543

913.895.4600

Fax: 913.895.4650