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Computer Applications Training Required in Medical Facilities in Lynchburg, Virginia

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COMPUTER APPLICATIONS TRAINING REQUIRED

IN MEDICAL FACILITIES IN LYNCHBURG, VIRGINIA

_____

A Research Study Presented to the Faculty

of the Department of STEM Education and Professional Studies

at Old Dominion University

_____

In Partial Fulfillment of the Requirement

for the Degree of Masters of Science

in Occupational and Technical Studies

_____

By

Wanda Brooks McGee

August 2010

Signature Page

This research paper was prepared by Wanda Brooks McGee under the direction of Dr. John Ritz in OTED 636, Problems in Occupational and Technical Studies. It was submitted as partial fulfillment of the requirements for the Masters of Science degree in Occupational and Technical Studies.

APPROVED BY:_____   DATE: _____

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                 Advisor and Graduate Program Director

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CHAPTER I

INTRODUCTION

Each year an average of 20 students graduate from National College in Lynchburg with diplomas or certificates in Health Care Management, Health Information Technology, Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding. Many more students are registering and graduating from the Central Virginia Community College in those same medical fields. While basic computer keyboarding and introductory computer courses are offered in these programs, it is unknown whether the skills obtained in these classes are sufficient to meet the needs of medical facilities hiring entry level office positions. Currently there is no common repository for information that tracks what computer applications are used most often in medical offices and where the gaps are between graduate knowledge and skills needed. In the absence of a repository of information and because medical offices and hospitals are becoming more digitized, it is crucial to determine what applications are currently being used and train graduates according to that need.

STATEMENT OF THE PROBLEM

The problem of this study was to determine the types of computer applications training that are required for entry level office and support positions in medical offices and the hospital system in Lynchburg, Virginia.

RESEARCH OBJECTIVES

The following research goals were established in order to answer the problem:

1. Identify computer applications software being utilized in medical offices and hospital facilities.

2. Assess the current level of computer training of entry level employees in local medical facilities.

3. Identify computer applications training programs offered within those medical facilities.

4. Identify computer applications classes that should be offered by local business schools and community colleges in Lynchburg, Virginia, to meet the needs of the local medical offices and hospital facilities.

5. Identify the computer training required for entry level office and support positions in local medical offices and hospital facilities.

BACKGROUND AND SIGNIFICANCE

The metropolitan Lynchburg area (consisting of Lynchburg City and the surrounding counties of Amherst, Appomattox, Bedford, and Campbell) had a population of 203,000 in 2005 (Demographics, 2003-2010). In order to serve the area, Centra Health, Inc. manages three local hospitals, along with numerous treatment, mammography, rehabilitation, and medical facitities. Independent physicians offices are also numerous because of the sizable hospital system. Because medical services are an integral part of the employment community in Lynchburg, local business schools and the community college have noticed a rise in the students seeking medical degrees, which include medical office training. According to Sue Coleman (personal communication, March 5, 2010), Director of Medical programs at National College, enrollment for these programs has increased dramatically.

One reason for the increase in enrollment may be the emphasis that is being placed on creation of a digital medical community and computerized medical record. In

2009 when then President-elect Obama was quoted by David Goldman (2009), as saying proposed health care could be modernized by "making all health records standardized and electronic" (para. 1). Phillip Longman, a senior fellow at the New America Foundation, (2009) says that almost all experts agree that "the health care industry must step into the twenty-first century and become computerized" (para. 4). Even the American Medical Association has developed a policy intiative for the

> identification and continuing development of activities designed to make the computer a useful tool for creating a more efficient work environemnt for the physician, while at the same time improving patient care" (American Medical Association [AMA], 1995-2010).

Even though sources are calling for computerization in medical offices as a means to improve patient care and health information maintenance and workflow, there are no statistics that discuss the specifics of adoption of eletronic procedures and no sources discussing computer software being used in local medical offices. The large medical community in Lynchburg requires a large pool of skilled medical office professionals, including individuals who are capable of manuvering in the digital environment and being competent in computer applications. Without the specific information about what computer software is being used in Lynchburg area medical offices, local business and community colleges educators are unsure if the current curriculum is sufficient to meet the needs of the medical community. Only by evaluating what is currently in use in medical offices can local business schools and community colleges become more competitive in their medical program offerings and ultimately offer better qualified graduates to the medical community.

LIMITATIONS

The limitations to the study were as follows:

1. Because this study was limited to a sampling of Lynchburg area medical offices and hospitals, the results were restricted to those medical facilities only and are not relevent to other areas.

2. Only those computer applications currently in use by the sample population are included in the findings. Since there are a wide variety of computer applications specifically designed for use in medical facilties, it is possbile that these specialized applications are underreported.

3. Only administrative medical office certificate and diploma programs offered at National College in Lynchburg and Central Virginia Community College were inlcuded in the study, therefore, results will not be relavent to branches of National College or Virginia community colleges outside of the Lynchburg area.

ASSUMPTIONS

The basic assumptions of this study hold that:

1. Various computer applications may be used in any medical office environment.

2. As computer applications are updated to newer versions, computer competency is important to be able to navigate through updated applications.

3. Trends in medical office procedures are subject to change and computer applications training built into the curriculum should reflect those changes.

4. Schools are properly training graduates for careers in the medical office profession.

PROCEDURES

The methods of data collection for this study began with identifying and selecting a population from whom meaningful data could be collected. A large random sample of fifty-five was chosen from local treatment centers, mammography centers, rehabilitation facilities, and local physicians offices. In addition, all three hospitals managed by Centra Health, Inc. were included in the sample.

Data for the study were obtained through a standardized survey that was delivered by the researcher to the office manager in the local hospital staffing division, local treatment centers, mammography centers, rehabilitation facilities, and local physicians offices. A cover letter was included in order to explain the purpose of the study, how the information would be used, and to assure confidentiality of all respondent identities. Office managers were given 14 days to respond to the survey. The researcher made follow-up visits and phone calls in order to clarify information in the survey responses and to ensure maximum participation in the survey.

Once all surveys were received, the information was compiled and organized by research question to evaluate the results. Responses were grouped and evaluated using desccriptive statistical methods. Those results were compared to computer applications classwork currently required in the Health Care Management, Health Information Technology, Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding degree programs offered through National College and at Central Virginia Community College in Lynchburg.

DEFINITION OF TERMS

This section is provided in order to clarify key terms that have special meaning in this study.

Computer applications	This term encompasses any software product used in a medical office or other facility to carry out daily tasks of billing, entering information into patient records, appointments, and routine diagnostic patient care.
Computerized patient records	Electronically stored information about individuals, uniquely identified by an identifier.
Informatics	Its broad meaning is the science of processing data. Within health and social care, it is used to refer to the processing of data on patients and clients, normally – but by no means exclusively – through IT systems.
Administrative medical professional	Personnel within medical offices and facilities whose specific task it is to maintain any patient information as directed by their facility. This can include appointments, updating patient records, and transcription of medical information for physicians.
Medical professional	Personnel who have direct contact with patients and deliver patient diagnosese and/or treatement.

SUMMARY

This research study consists of five chapters of information. Chapter I introduces the need for a study to determine if current training received at local business schools and the community college in Lynchburg is sufficient to meet the skill requirements for local medical offices and hospital facilities. Background and significance for the research problem discusses the fact that medical facilites in the Lynchburg area employ a large amount of the local population, illustrating the need for skilled employees in the digital environment. The study is confined to the Lynchburg area medical community and local business schools and community colleges and, due to the fact that a wide variety of

specialized computer software for the medical office is available, some software may be underreported.

Reseach objectives are established in order to identify computer applications software being utilized in medical offices and hospital facilities, assess the level of training for current and future employees, identify any training programs within the medical facilities and identify what classes should be offered by local business schools and community colleges in Lynchburg, Virginia, to meet the needs of the local medical offices and hospital facilities. It is assumed that various computer applications may be used in any medical office environment and that computer comptency is required in order to be successful in the medical environment. It is also assumed that as medical office procedures change, computer applications training built into the curriculum should reflect those changes; however, local business schools and community colleges are providing sufficient training for careers in the medical field. Definitions for terms used within the the study are included for clarification.

Chapter II, the Review of Literature, provides an overview of current scholarly publications which discuss the importance of computer competency in medical offices. In addition, this chapter dicusses the role of future digitization the medical community, what computer courses are currently offered in the curriculum at National College and Central Virginia Community College, and what the labor statistics project the need will be for medical office personnel.

Chapter III, Methods and Procedures discuss how the population was determined for the study and what methods of data collection were used in the study. It also discusses the descriptive statistical means used to analyze the data.

Chapter IV, Findings, presents the results of the survey through descriptive statistical analysis. It organizes the information received from the survey by the research objectives that the information gathered supports.

Chapter V, Summary, Conclusions, and Recommendations, gives a summary of the research and draws conclusions based on the data received and makes final recommendations based on conclusions. In addition, recommendations are made for future studies.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this chapter is to review literature that is related to computerized medical practices and explain the need for a study to identify computer applications currently being used in Lynchburg area medical facilities. It is important to realize that the medical community is ever-changing and rapidly adapting to technology as a means of improving the patient experience in the doctor's office and other medical facilities. Discussions on current computer applications in medical facilities, computer courses required in curriculum for medical programs, and how computer applications may be utilized in the future are included within this chapter.

COMPUTER APPLICATIONS IN MEDICAL FACILITIES

Personal computer systems are common in most medical facilities. From the time a patient enters a doctor's office or hospital, relevant information about the patient may be entered into a computer terminal so that the information can be maintained and updated as needed. According to *Delmar's Comprehensive Medical Assisting* textbook, Lindh, Pooler, Tamparo, and Dahl (2010), electronic medical records are used in "30% of the medical offices in the United States" (p. 191) compared to 88% usage in Canada and Great Britain. The difference in adoption rate demonstrates a critical need to increase adoption rates for computerization in medical offices and produce graduates who have sufficient computer competency to interact with the variety of computer applications used in a computerized medical office. Doris Humphrey's text, *Contemporary Medical Office Procedures*, (2004) says that "medical malpractice lawsuits, managed health care plans, convenience, and more enlightened patients have driven the surge toward high

technology in medical offices (p. 145). Both *Delmar's Comprehensive Medical Assisting* and *Contemporary Medical Office Procedures* provide extensive training for medical office professionals in the computerized medical office environment.

Medical offices are not limited to electronic systems for medical records, but use a wide variety of computer applications which work with computer systems for efficiency that include general accounting functions, financial management functions, facilities management, and materials management (Anderson, 1992). Computer applications are also a crucial part of the daily operations in a medical facility. Scheduling applications are used to track patient appointments and employee schedules. Word processing software and mail management applications are used for written and electronic communications. Spreadsheet applications are used to analyze patient, employee, and other data related to business operations in the medical facility. Database or inventory tracking applications track inventory and allow for automated ordering when supplies are required.

Aside from the daily operations of appointments and filling in patient profile information, probably the most common use for the computer by a medical administrative professional is in medical billing and coding. This is the process by which a medical facility can track what services they have provided and report it to the insurer for re-imbursement and/or to the patient for payment. Since each service has a specific code associated with it, the process for medical coding can be long and tedious; however computers provide the opportunity for electronic claims to the insurer. The result is fewer errors in coding and faster claims and billing.

Other areas of medicine are also turning to the computer to better serve the patients' needs. Pharmacists and pharmacy technicians now enter patient prescription information into computer applications that track what is prescribed to the patient and the dosages. These systems also track patient billing for medications, insurance information, and can predict possible problems with drug interactions based on the patient's records. Once the data are input using the proper information system, the computer can also generate patient information on the drugs that are prescribed and labels for the medication. By using these informatics systems, pharmacies can deliver prescriptions rapidly and accurately.

 In all, computer applications have become an integral part of the medical community and in order to prepare for a career as a medical office professional. "Today the medical assistant must be computer literate, able to quickly learn how to use new programs, and knowledgeable of computer procedures" (Lindh, et al. 2010, p. 183).

COMPUTER COURSES IN CURRENT CURRICULUM

In order to fulfill the need for qualified medical professionals National College and Central Virginia Community College both offer degree and certificate programs in a variety of medical office professions. National College offers the widest variety of programs including a bachelor's degree in Health Care Management, associate's degrees in Health Information Technology and Medical Office Assisting and diplomas in Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding. Central Virginia Community College offers career studies certificates in Medical Coding and Medical Transcription. All of the programs offered from both schools include an introductory course, Introduction to Computer Applications and Concepts, in order to

prepare graduates with a basic knowledge of four commonly used Microsoft applications, Microsoft Access, Excel, PowerPoint, and Word. The Medical Office Specialist curriculum adds Microsoft Word as a requirement and Word and Excel are offered as electives in the Medical Office Transcription and Medical Office Specialist curriculums, respectively. Only the Health Care Management curriculum requires more in depth study of Microsoft Word and Microsoft Excel. Table 1 shows computer courses required in each medical program.

Table 1

Computer Courses Required for Medical Programs

Degree or Certificate Program	Introduction to Computer Applications and Concepts	Microsoft Word	Microsoft Excel
Health Care Management	yes	yes	yes
Health Information Technology	yes		
Medical Office Assistant	yes		
Medical Office Transcription	yes	*yes	
Medical Office Specialist	yes	yes	*yes
Medical Billing and Coding	yes		

*offered as an elective in the program at National College

THE FUTURE

According to the Bureau of Labor Statistics (2009) the need for secretaries and administrative assistants is expected to rise by 11% between 2008 and 2018 with "above average employment growth in health care and social assistance industry" (para. 21).

These numbers project national statistics, however the rate for Lynchburg is projected at 31.12% by 2016, reflecting the presence of Centra Health, Inc. as the largest employer in the Lynchburg area (Virginia Workforce Connection, 2010). Medical professionals are a large percentage of the employees of the medical community in Lynchburg; administrative medical personnel are the balance of employees in the medical industry.

While computers are prominent in most medical facilities, there are smaller medical offices who are slow to adopt personal computer usage in the medical or dental practice, either because of lack of knowledge or because computer systems and the software may be cost prohibitive. These health care providers are being encouraged to move toward digital information systems by offers of federal stimulus money and the promise of incentive payments in order to recoup the costs of implementing electronic systems (Shideler, 2010).

The effort to digitize medical offices not only calls for adminstrative systems to improve work flow in medical offices, but calls for the implementation of computer patient records [CPR] and new medical transcription techniques. CPR technology entails the capture, storage, retrieval, transmission, and manipulation of patient specific healthcare-related data, including clinical administrative and biographical data (Raghupathi, 1997). The effort to digitize records that can be securely shared across medical facilities is aimed at improving patient care and treatment. According to Brenda Hurley (2006), medical professionals must embrace the coming of new technology and prepare for the changes to come.

SUMMARY

Chapter II, the Review of Literature, offered evidence of the importance of computer competency among administrative medical personnel. It outlined computer courses currently required in Health Care Management, Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding degree programs offered through National College and at Central Virginia Community College in Lynchburg. In addition, the chapter reviewed some of the statistics related to the current labor market and what the demand for adminstrative personnel was expected to be in terms of knowledge of computers and numbers of skilled personnel required to run those computers.

Chapter III provides the Methods and Procedures for gathering information in the medical community on what computer skills are currently being utilized and what in-house training is being offered at the medical facilities. In addition, it discussed what the future needs for skilled administrative medical office personnel might be.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this chapter is to explain the methods and procedures used to obtain data for this study. This chapter explains how and why the population was chosen for the study. It also discusses the instrument used to obtain data for the study and the methods of data collections. Lastly, it discusses methods of data collection and the means of analyzing that data.

POPULATION

Participants in this study were chosen based on the total population of 110 medical offices, including in-patient facilities, in the Lynchburg area. Using a list provided by the local medical association, a random sample of fifty-five medical offices, representing 50% of the total medical offices were selected to participate in this study. In addition, three in-patient hospital facilities, representing 100% of the in-house, non-geriatric in-patient facilities in Lynchburg, were also included in this study.

INSTRUMENT DESIGN

A survey was designed to collect data based on the study's research objectives. Using a 5-point Likert-scale (1 = poor, 2 = fair, 3 = average, 4 = above average, 5 = expert) participants were first asked to rate the computer training of entry level employees who recently graduated from a local business school or community college. Next participants were asked a forced yes or no response question on whether they offered in house training programs. If participants answered no, they were directed to the third survey question. If participants answered yes to the question, they were directed to Question 2b and asked to select the answer that best described how in-house training was

conducted based on the forced responses of employee-to-employee, computer-based training, seminar training, or formal classroom training. Question 3 provided a list of common software applications and asked the participants to choose all applications that were currently being used in that facility. A comment section was provided should the participants wish to add applications not listed or provide other comments. Question 4 provided the same list of applications and asked the participants to choose all applications which they would prefer entry level employees to have extensive knowledge. A comment section was provided should the participants wish to add applications not listed or provide other comments. Question 5 asked participants what level of expertise they required for entry level office employees. Responses used a 5-point Likert-scale (1 = poor, 2 = fair, 3 = average, 4 = above average, 5 = expert). A final comments section was added and participants were asked if they would like to receive a copy of the completed research study via e-mail. See Appendix A for a copy of the survey.

METHODS OF DATA COLLECTION

A cover letter explaining the purpose of the study, along with a copy of the survey, and a post-paid envelope was delivered by the researcher directly to office managers in each of the facilities. Participants were asked to respond within 14 days of receipt of the survey. In order to clarify responses and ensure that sufficient data were collected, the researcher made follow-up visits and phone calls to office managers as needed. See Appendix B for a copy of the cover letter.

STATISTICAL ANALYSIS

Once surveys were returned and all data clarifications were made, the researcher used descriptive statistical methods to organize and interpret the data. The data were

statistically analyzed using number of responses, frequency of answers, and means. The frequency and number of responses were calculated and a percentage used to determine what applications were currently being used and what applications training should be recommended, if any, for incorporation into medical degree programs at local business schools and community colleges.

SUMMARY

Using a list provided by the local medical association, fifty-five medical facilities and three in-patient facilities were chosen to participate in this research study. A cover letter and survey were delivered to each of the participants in order to collect data that aligned with the research objectives. In order to ensure maximum participation in the study and clarify information, follow-up visits and phone calls were made. Once all responses were received the data were organized and interpreted using the descriptive statistics of number of responses, frequency, and means.

Chapter IV discusses the response rate of the study and reports the findings based on the data collected. Descriptive statistical analysis of each survey question is given in relation to the research objective they support.

CHAPTER IV

FINDINGS

This chapter presents an analysis of the data collected from the medical office survey sent to local medical facilities. It includes information on the response rate and analyzes the responses to each survey question.

RESPONSE RATE

The survey was delivered from June 7 through June 9, 2010, to office managers in the local hospital staffing divisions, local treatment centers, mammography centers, rehabilitation facilities, and local physicians offices. Office managers were given 14 days from the date of receipt to respond to the survey. Because initial response was low, the researcher made follow-up visits and phone calls in order to clarify information in the survey responses and to ensure maximum participation in the survey. The follow-up was completed on July 12, 2010.

Forty-six out of fifty-five chosen participants from local treatment centers, mammography centers, rehabilitation facilities, and local physicians offices responded to the survey, representing an 83% participation rate. All three local staffing divisions responded, representing a 100% participation rate from local hospitals. Taken together in-patient and other medical facilities represented a 91.5% overall response rate. The researcher received seven responses via direct mail, two responses via phone call and the remaining forty (including the hospital) responses were collected by the researcher at each facility. Nine facilities chose not to participate in the research. Table 2 shows the response rate.

Table 2

Response Rate

Facilities Surveyed	Total Surveys Sent	Total Responses	% of Participation
Treatment centers, mammography centers, rehabilitation facilities, physicians offices	55	46	83%
In-house patient facilities	3	3	100%
Overall response rate			91.5%

REPORT OF SURVEY FINDINGS

Survey findings are reported to correlate with the research questions for the study. A description and tabulation of each survey response is provided along with a corresponding table. The researcher used descriptive statistical methods to organize and tabulate collected data. The data compiled from the returned surveys used number of responses, frequency of answers, and mean to statistically analyze data.

Current Applications Used

Research Objective 1 was to *identify computer applications software being utilized in medical offices and hospital facilities*. In order to fulfill this objective, survey Question 3 listed 60 of popular programs used in medical offices and asked respondents to check all that applied to their office. A comment section was provided in order to allow respondents to list additional programs. Only those programs that were selected or communicated were analyzed. Percentages are based on the number of times an item was chosen.

The most frequently selected software, Microsoft Word, Excel, and Outlook, were reported 49 times (100%). Microsoft PowerPoint and Access was reported 44 times and 24 times respectively (89.8% and 49%). The most frequently reported medical software products at 22 times were MegaWest Practice Management Software and McKesson EMR (44.9%). Microsoft Project was reported 9 times (18.4%), GE Synergy was reported 5 times (10.2%) and SequelPro was reported 2 times (4.1%). Cumulatively, 49 respondents made 297 choices from a list of 58 applications. The response frequencies and percentages are included in Table 3.

Table 3

Software currently being used by medical offices

Software Used	x	f	%
Microsoft Word 2007	11	49	100%
Microsoft Excel 2007	10	49	100%
Microsoft Outlook 2007	9	49	100%
Microsoft PowerPoint 2007	8	44	89.8%
Microsoft Access 2007	7	24	49%
MegaWest Practice Management Software	6	22	44.9%
McKesson EMR	5	22	44.9%
Microsoft Project	3	9	18.4%
GE Cynergy	2	5	10.2%
SequelPro	1	2	4.1%

Note. x = ordinal ranking; f = frequency; % = percentage (rounded one decimal value); total number of respondents, n = 49

Current Level of Training

Research Objective 2 was *to assess the current level of computer training of entry level employee in local medical facilities.* In order to fulfill this objective, respondents were given Likert-scale responses of poor, fair, average, above average, and expert and

asked to rate *the computer training of entry level employees who recently graduated from a local business school or community college*. The most frequent rating by respondents was *average* which was answered 22 times (44.9%). *Average* rating is above the mean of 2.5, which indicated that a majority of respondents feel that the level of training for entry level employees is sufficient. The *fair* rating was given 18 times (36.7%), falling below the mean. Less frequent ratings were *poor* answered five times (10.2%), *above average* answered 3 times (6.1%), and *expert* answered one time (2.4%). The response frequencies and percentages are included in Table 4.

Table 4

Current level of training for entry level employees

	Poor	Fair	Average	Above Average	Expert	
	f (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)	M
Q #1	5 (10.2%)	18 (36.7%)	22 (44.9%)	3 (6.1%)	1(2.4%)	2.5

Note. *f* = frequency of response; % = percentage (rounded one decimal value); total number of respondents, n = 49; *M* = mean (rounded one decimal value); mode = 22

In-house Training Programs

Research Objective 3 was to *identify computer applications training programs offered within medical facilities*. In order to fulfill this objective, survey Question 2 asked whether respondents offered in-house training programs. If respondents answered yes they were directed to answer Question 2b which asked how training was conducted. Respondents were given the choice of answering *employee-to-employee*, *computer-based training*, *seminar training*, and *formal classroom training*. All 49 participants responded that they did offer in-house training. The majority of respondents chose e*mployee-to-employee* as their training method, answering 36 times (73.5%). This indicated that most

medical facilities are training employees one-on-one rather than relying on computer-based or classroom methods. Respondents chose *computer-based training* six times (12.3%) and *seminar training* seven times (14.3%). No respondents chose formal classroom training as their in-house training program. The response frequencies and percentages are included in Table 5.

Table 5

In-house training currently offered

	Employee-to-employee	Computer-based training	Seminar training	Formal Classroom training
	f (%)	*f* (%)	*f* (%)	*f* (%)
Q #2b	36 (73.5%)	6 (12.3%)	7 (14.3%)	0 (0%)

Note. f = frequency of response; % = percentage (rounded one decimal value); total number of respondents, n = 49

Applications That Should Be Offered

Research Objective 4 was to *identify computer applications classes that should be offered by local business schools and community colleges in Lynchburg, Virginia, to meet the needs of the local medical offices and hospital facilities*. Question 4 asked respondents to choose computer classes that should be offered from a list of 60 popular applications including the Microsoft suite of applications. Only those programs that were selected or communicated during follow-up were analyzed. Percentages were based on the number of times an item was chosen.

All facilities preferred entry level employees to have extensive knowledge of Microsoft Word 2007 and Microsoft Excel 2007. Respondents also chose Microsoft PowerPoint 2007 32 times (65.3%) and McKesson EMR 22 times (44.9%). Respondents

also chose Microsoft Access 2007 13 times (25.5%) indicating that it was less important

for entry level employees to have extensive knowledge in Microsoft Access 2007. The

response frequencies and percentages are included in Table 6.

Table 6

Applications that should be offered

	x	f	%
Microsoft Word 2007	5	49	100%
Microsoft Excel 2007	4	49	100%
Microsoft PowerPoint 2007	3	32	65.3%
McKesson EMR	2	22	44.9%
Microsoft Access 2007	1	13	25.5%

Note. x = ordinal ranking; *f* = frequency; % = percentage (rounded one decimal value); total number of respondents, n = 49

Level of Training Required

Research Objective 5 was to *identify the computer training required for entry*

level office and support positions in local medical offices and hospital facilities. In order

to fulfill this objective, Question 5 asked r*espondents what level of expertise in overall*

computer operations they required for entry level employees. The most frequent response

was *above average* which was chosen 18 times (36.7%). Respondents chose *fair* 16

times (32.7%) and *average* 15 times (30.6%). No respondents chose *poor* or *expert*

ratings. Both *average* and *above average* ratings ranked above the mean of 3.4 which

indicated that the majority of respondents require at least average or above average

computer skills for entry level employees. The response frequencies and percentages are

included in Table 7.

Table 7

Required entry level computer skills

	Poor	Fair	Average	Above Average	Expert	
	f (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)	M
Q #5	0	16 (32.7%)	15 (30.6%)	18 (36.7%)	0	3.4

Note. *f* = frequency of response; % = percentage (rounded one decimal value); total number of respondents, n = 49; *M* = mean (rounded one decimal value)

SUMMARY

Chapter IV reported the findings of the survey, which had an overall response rate of 91.5 %. The data gathered through the survey was interpreted and presented by research objective. Using, frequency of responses, percentages, and mean, responses indicated that the most frequently used applications in medical offices are Microsoft Word 2007, Microsoft Excel 2007 and Microsoft Outlook. A majority of participants indicated that the current computer skills of entry level employees already employed were average. The majority also indicated that current computer skill requirements for entry level employees be average or above average. Finally, 100% of the respondents indicated that Microsoft Word and Microsoft Excel should be a curriculum requirement for medical office professionals.

In Chapter V, Summary, Conclusions, and Recommendations, the researcher will present a summary of this research study and draw conclusions based on the data collected. Recommendations will be made based on the conclusions drawn from the data.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This is a result of the lack of information about computer applications training received and required for medical office professionals in the Lynchburg area. In order to clarify the level of need for computer training it was important to study what is currently offered and assess whether computer training within medical programs offered through local business schools and community colleges were sufficient to meet the needs of the medical community. This chapter summarizes the research study and draws conclusions based on the data collected. Recommendations will be made based on the conclusions drawn.

SUMMARY

The problem of this study was to determine the types of computer applications training that were required for entry level office and support positions in medical offices and the hospital system in Lynchburg, Virginia. The following research objectives were established in order to answer the problem statement:

1. Identify computer applications software being utilized in medical offices and hospital facilities.

2. Assess the current level of computer training of entry level employees in local medical facilities

3. Identify computer applications training programs offered within those medical facilities.

4. Identify computer applications classes that should be offered by business schools and community colleges in Lynchburg, Virginia, to meet the needs of medical offices and hospital facilities.

5. Identify the computer training required for entry level office and support positions in Lynchburg area medical offices and hospital facilities.

The limitations to the study were as follows:

1. Because the study was limited to a sampling of Lynchburg area medical offices and hospitals, the results were restricted to those medical facilities only and are not relevent to other areas.

2. Only those computer applications currently in use by the sample are included in the findings. Since there are a wide variety of computer applications specifically designed for use in medical facilties, it is possbile that these specialized applications are underreported.

3. Only administrative medical office certificate and diploma programs offered at National College in Lynchburg and Central Virginia Community College were inlcuded in the study, therefore, results will not be relavent to branches of National College or Virginia community colleges outside of the Lynchburg area.

The basic assumptions of this study were that:

1. Various computer applications may be used in any medical office environment.

2. As computer applications are updated to newer versions, computer competency is important to be able to navigate through updated applications.

3. Trends in medical office procedures are subject to change and computer applications training built into the curriculum should reflect those changes.

4. Schools are properly training graduates for careers in the medical office profession.

The literature offered evidence of the importance of computer competency among administrative medical personnel and reviewed statistics related to the current labor market and what the demand for adminstrative personnel was expected to be in terms of knowledge of computers and numbers of skilled personnel required to run those computers.

The population for this study was a group of fifty-five medical offices, representing 50% of the total medical offices and three in-patient hospital facilities, representing 100% of the in-house, non-geriatric in-patient facilities in Lynchburg. A survey and cover letter was developed in order to gather information supporting the research goals. Forty-six of the 55 medical offices participated in the study and all 3 of the in-patient facilities participated, representing an overall response rate of 91.5%. Once responses were received, data were organized and compiled, and a descriptive statistical analysis was used to interpret the data.

CONCLUSIONS

This portion of the study will evaluate information found to accompany each research objective and draw conclusions based on the statistical findings. Based on the responses from the survey and rate of participation by medical offices, the researcher noted that medical facilities have adapted to the level of computer training currently offered and have developed methods of training on applications unique to the individual

facilities. In addition, it was recognized that, outside of Microsoft applications, medical applications are varied within the medical community. MegaWest Practice Management Software and McKesson EMR were the most predominant medical applications in use.

Research Objective 1 was *to identify computer applications software being utilized in medical offices and hospital facilities*. Respondents were asked in Survey Question 3 to *identify computer applications software being utilized in medical offices and hospital facilities.* They indicated that Microsoft products including Word, Excel, and Outlook, were used in 100% of offices. PowerPoint was used by 89.8%. Other less-used applications were Microsoft Access and Microsoft Project. Only 29 participants indicated that specialized medical applications, MegaWest Practice Management Software, McKesson EMR, GE Cynergy and SequelPro, were in use in their medical facilities. The disparity between Microsoft products and medical application software does not seem to align. The conclusion is that medical software applications not listed on the survey may have been underreported.

Research Objective 2 was *to assess the current level of computer training of entry level employee in local medical facilities.* In order to fulfill this objective, Survey Question 1 asked respondents to rate the computer training of entry level employees who recently graduated from a local business school or community college, using forced responses of poor, fair, average, above average, and expert. The most frequent rating by respondents was *average* which was answered 22 times (44.9%), and was above the mean of 2.5 indicating that a majority of the respondents felt that the current level of computer training was sufficient. However, a rating of *fair* was given 18 times (36.7%). Though falling slightly below the mean, the percentage of responses for this rating were

significant enough to indicate that more training may be needed for entry level employees.

Research Objective 3 was to *identify computer applications training programs offered within local medical facilities.* Survey Questions 2 and 2b asked respondents to indicate what type of training programs are currently offered in the medical offices. All offices responded that training was currently conducted in-house and a majority (36 respondents or 73.5%) conducted employee-to-employee training. Without further research it cannot be determined whether the large percentage of in-house employee-to-employee training was due training in computer functions specific to the medical facility or due to a lack of overall computer training.

Research Objective 4 was to *identify computer applications classes that should be offered by business schools and community colleges in Lynchburg, Virginia, to meet the needs of medical offices and hospital facilities.* Responses from Survey Question 4 indicated that all facilities (100%) preferred for entry level employees to have extensive knowledge of Microsoft Word 2007 and Microsoft Excel 2007. Respondents also chose Microsoft PowerPoint 2007 32 times (65.3%), McKesson EMR 22 times (44.9%) and Microsoft Access 2007 13 times (25.5%). The conclusion is that Word 2007 and Microsoft Excel 2007 should be included in the curriculum for all medical office professionals. In addition, a class featuring specialized medical software such as McKesson EMR should be added to the curriculum.

Research Objective 5 was fulfilled with Survey Question 5 which asked respondents to *identify the computer training required for entry level office and support positions in local medical offices and hospital facilities*. Results showed that the most

frequent response was *above average* which was chosen 18 times (36.7%), followed by *fair* chosen 16 times (32.7%), and *average* at 15 times (30.6%). Both *average* and *above average* ratings ranked above the mean of 3.4 which indicated that the majority of respondents required at least average or above average computer skills for entry level employees. Comparing these responses to the responses from Survey Question 1 which indicated that the current level of training for entry level employees was *average* which was answered 22 times (44.9%) and *fair* which was answered 18 times (36.7%), there was clearly a gap in entry level computer skills desired by medical facilities. The conclusion was that the level of training in basic computer competencies should increase.

RECOMMENDATIONS

Based on the information provided by medical facilities in the Lynchburg area, training programs currently offered through local business schools and the community college were insufficient to meet the needs of the medical community at this time. Since all medical office programs being offered currently required an introductory course in business applications which included training in Microsoft Word 2007, Microsoft Excel 2007, Microsoft Access, and Microsoft PowerPoint 2007, recent graduates had at least *fair* skills in those programs. However, survey results indicated that medical offices required current entry level employees to have *average* or *above average* skills. Based on this gap in training and the responses that training should be offered in Microsoft Word 2007 and Microsoft Excel 2007, it is recommended that these additional classes be added to the Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, Medical Billing and Coding, and Pharmacy Technology degree programs in order to

improve computer competency and fulfill entry level computer requirements for medical employees.

In consideration of the fact that medical facilities use a variety of other specialized practice management and electronic medical record applications, it is recommended that research be conducted to identify generic programs of each that can be included in the curriculum for Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding degree programs. Until generic programs can be identified, it is recommended that a class for MegaWest Practice Management Software and McKesson EMR be developed and added to degree programs for Medical Office Assistant, Medical Office Transcription, Medical Office Specialist, and Medical Billing and Coding.

Since the medical community is growing and changing, mandated medical systems may be forthcoming that would require training. It is recommended that a research study targeting specialized medical applications be conducted in five years times, to allow for changes in medical systems and practices. Additionally, research should be conducted to study the impact of computerized health information on the patient.

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APPENDICES

Appendix A: Survey Instrument (Questionnaire)

Appendix B: Accompanying Cover Letter to Letter to Medical Office Manager

Appendix A

Survey Instrument

OLD
DOMINION
UNIVERSITY

Medical Office Questionnaire

The purpose of this questionnaire is to gather feedback from Lynchburg area medical office managers regarding computer education within medical office programs offered in local business schools and community colleges. In cooperation with Old Dominion University, the researchers will hold all responses in strict confidence during this study. Information you provide will be statistically summarized with other responses by medical office managers and will not be attributable to any single individual. Participation is voluntary and the information you provide will be kept confidential.

Directions: Please fill in the circle that indicates your selection or write-in your answer as appropriate. Each questionnaire item includes an area to provide further comment.

1. **How would you rate the computer training of entry level employees who recently graduated from a local business school or community college?**

○	○	○	○	○
Poor	Fair	Average	Above Average	Expert

Comment:_____

__

2. **Do you offer any in-house training programs in software applications? If yes, continue to question 2b.**

○	○
Yes	No

2b. If yes, how is the training conducted?

○	○	○	○
Employee-to-	Computer-	Seminar	Formal Classroom

<table>
<tr><td>employee</td><td>based training</td><td>training</td><td>training</td></tr>
</table>

Comment:_____

_____

—

3. **What software is currently being used by your medical office? Please check all that apply.**

1500 soft pro	N8soft
ABN Assistant	NueMD Medical Billing
AccuMed	OmniMD EMR
Claim Manager MT	Patient Manager Advanced
Clin1 Suite	PM Plus
ClinicGate	SmartWorks
CollaborateMD PMS	SSIMED Medical Billing Services
Doctors Helper	Vericle
DrsMagic	VersaForm EMR
Electronic Data Interchange	Vertex Case Management Software
e-Medsys Practice Manager	Visual Private Office
ExpertPM	Athenahealth\
EZ Office	Billworx 6
Ez-Med Software	Brickell Medical Office
EzMedPro - Medical Practice Software	DuxWareHPlusPro
FoxMed	Kareo
GreenFlag Profit Recovery	PracticeAdmin
HARMONY	Practice Partner Medical Billing
Health Highway	Medisoft
HorizonMIS	Medlook
icdPIX	Microsoft Access
Impact Medical System	Microsoft Excel
Ironbark Healthcare Software	Microsoft Outlook (or Outlook Express)
LeonardoMD Renaissance	
MDPERFECT	Microsoft PowerPoint
Medappz Practice Management	Microsoft Project
Medical Office One	Microsoft Word
MedicsElite	SOS Office Manager
MICA-MED	Spectrasoft
MPM Office	VMN
MPS Remedy	

_____ www.manaraa_____

Comment:_____   _____

_____   _

_____

4. **What software would you like for entry level office employees to have extensive knowledge of prior to employment in your office? Check all that apply.**

1500 soft pro
ABN Assistant
AccuMed
Claim Manager MT
Clin1 Suite
ClinicGate
CollaborateMD PMS
Doctors Helper
DrsMagic
Electronic Data Interchange
e-Medsys Practice Manager
ExpertPM
EZ Office
Ez-Med Software
EzMedPro - Medical Practice Software
FoxMed
GreenFlag Profit Recovery
HARMONY
Health Highway
HorizonMIS
icdPIX
Impact Medical System
Ironbark Healthcare Software
LeonardoMD Renaissance
MDPERFECT
Medappz Practice Management
Medical Office One
MedicsElite
MICA-MED
MPM Office
MPS Remedy

N8soft
NueMD Medical Billing
OmniMD EMR
Patient Manager Advanced
PM Plus
SmartWorks
SSIMED Medical Billing Services
Vericle
VersaForm EMR
Vertex Case Management Software
Visual Private Office
Athenahealth\
Billworx 6
Brickell Medical Office
DuxWareHPlusPro
Kareo
PracticeAdmin
Practice Partner Medical Billing
Medisoft
Medlook
Microsoft Access
Microsoft Excel
Microsoft Outlook (or Outlook Express)
Microsoft PowerPoint
Microsoft Project
Microsoft Word
SOS Office Manager
Spectrasoft
VMN

Comment:_____

_____

__

5. **What level of expertise in overall computer operations do you require for entry level office employees?**

○	○	○	○	○
Poor	Fair	Average	Above Average	Expert

Comment:_____

_____

_____

—

Additional Comments: (Please indicate if you would like to receive a copy of the completed survey research via email)

_____
_____
_____
_____
_____

This concludes the questionnaire. Thank you for your participation in this survey.

Appendix B:

Accompanying Cover Letter to Letter to Medical Office Manager

<<Date>>

<<Title>> <<Firstname>> <<Lastname>>
<<Address1>>
<<City>>, <<State>> <<Zip>>

<<Greeting Line>>

As medical offices and hospitals become more digitized, the need for entry level employees with prior training in computer applications becomes more important. Although many technology programs have been created and implemented by local business schools and community colleges, we are interested in improving those programs to meet your need for skilled entry-level medical office employees. The purpose of our research study is to determine what computer programs are currently being used in Lynchburg area medical offices and improve the level of training for students seeking a career in medical office professions.

Enclosed you will find a questionnaire, as well as a postage-paid return envelope. Participation in this study is voluntary. While you may choose not to respond, returning the survey indicates your desire to share knowledge and actively contribute to this research activity. Your assistance and expertise will be useful in improving existing medical office programs in local business schools and community colleges. The information you provide will be safeguarded with confidentiality and reported only in aggregate form. Your completion and return of this survey indicates that you have been informed of the purpose of the study and your role, and that you consent to participate and allow us to use your responses in our study. Please accept our personal thank you for taking the time to answer and return the questionnaire.

Most important, your valuable time and efforts are appreciated. Completing the questionnaire should require about 10 minutes of your time. Please feel free to contact us should you have any questions or comments. All survey data will be held in strict confidence by the researchers. Please return the questionnaire in the postage-paid envelope by <<DateDate>>. Thank you in advance for your cooperation and support of this research study.

Sincerely,

Dr. John M. Ritz, DTE   Wanda Brooks McGee
Professor   ODU Graduate Student
Old Dominion University   Email:
wmcge001@odu.edu

Encl: Survey Instrument, Return Envelope