

Mitigating a Healthcare Crisis

The State of Adult Basic Education in the Allied Health Fields Professions

By

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Abstract

For a number of reasons there is a severe shortage of workers in a number of allied health professions. These reasons include generational culture, lack of awareness, low pay, lack of qualified instructors, clinical site procurement, funding deficits, lack of adult basic education (ABE) resources, language barriers, and others. The six models of ABE—advising, GED+, English as a second language (ESL), career pathways, college preparatory, are discussed as potential solutions to the shortage.

Questionnaire results, combined with a literature search, and personal experience of the author are considered both quantitatively and qualitatively. Trouble areas or pinch-points are—in descending order—affective skills, misunderstanding of rigor, language skills, reading/writing, critical thinking, socioeconomic factors, and mathematics. Populations of concern identified are—in descending order—ESL students, students with mental health issues, recent high school graduates, working mothers, and female students. Overwhelmingly, faculty support after class is the biggest tool employed, followed by various student support centers and lab assistants. The faculty desired resources—in descending order—are tutors linked to class, ABE educators in and outside of the classroom, tutors, industry mentors, and ESL Centers.

Fifteen recommendations pertaining to course design, learning support, support of underserved populations, ancillary services, and the mitigation of socioeconomic factors are presented.

Keywords: Allied health, ABE, adult basic education, healthcare

The purpose of this paper is to bring attention to the allied healthcare workforce shortage, outline the nature of the problem in Minnesota, and describe how ABE can be leveraged to address the issue. To accomplish this, I will frame in the crisis in terms of pinch-points, generational differences, and immigration. Findings come from an extensive literature search, one-on-one discussions with allied healthcare educators, and administration of a survey instrument (see Appendix). I also draw on my 23 years involvement in the post-secondary delivery of emergency medical services (EMS) education, 27 years of continuous employment as a street level EMS practitioner, seven years in EMS management, and time as EMS program director and associate academic dean over EMS programs.

It is important to acknowledge that in spite of dozens of faculty members contacted through the MinnState System, only seven, not counting one shallow contributor, responded to the questionnaire. The “shallow contributor” reported no pinch-points, thus never made it past the first question. I contacted the retired program director of that program, who identified sources of attrition her successor—and shallow contributor—did not acknowledge. This was one of two recently retired program directors I consulted in lieu of current faculty cooperation. One faculty questioned what I was going to do with the information even though I had explained it thoroughly. I expounded further on the purpose of this paper, yet he still did not provide information.

Undeterred, I presented the findings of this paper during a career and technical education summit, which was hosted by the System Office. Several allied health instructors, from across the system, were in attendance. In spite of having an engaged audience who orally indicated a willingness to provide information, none returned the survey that was passed out.

My worry is that although the System publicly advocates for cooperation and collaboration, it has in reality set up an adversarial environment where institutions compete against each other and even internally between programs. Thus, approaching faculty about their programs and pinch-points may be viewed as an effort on my part to gain a competitive advantage. This concern is not completely unwarranted given that within two weeks of writing this paper, the System Office approved two new paramedic programs in the Twin Cities Metropolitan Area in spite of shortages of clinical sites and low numbers of enrollment in existing programs.

Allied Healthcare Workforce Shortage

There is a severe shortage of allied health professionals across Minnesota (Healthcare Workforce Collaborative [HWC], 2005) and the nation (Patlak & Levit, 2009), and adult basic education (ABE) is key in mitigating the crisis. There are a significant number of underutilized laborers that cannot be tapped for lack of opportunity to cultivate their skills (Bergson-Shilcock, 2019). In 2001, the Secretary of the Department of Health and Human Services (HHS) foresaw that the shortage of allied health professionals would be even more significant than the nursing shortage (Hillborne, 2008). Edward O'Neil, former Director of the Center for Health Professions proclaimed, "as important as shortages in nursing, pharmacy, medicine, and even dentistry may become, they will fail to reach the depth of the looming crisis in the allied health workforce" (Center for Allied Health Professions, 2008 as cited in Patlak & Levit, 2009). This labor shortage, combined with the growth in demand for allied health professionals, poses a serious problem. Table 1 outlines expected demands among various allied health fields. It is important to note that demand for employees does not necessarily equate to the demand for education in that field by students.

Table 1.

Anticipated Growth of Allied Health Fields 2016-2026

Allied Health Profession	Growth
Dental Assistants	19%
Dental Hygienists	20%
Emergency Medical Technicians and Paramedics *	15%
Medical Assistants	29%
Nursing Assistants	11%
Orthotist and Prosthetists*	22%
Occupational Therapy Assistants	29%
Pharmacy Technician	12%
Physical therapy assistants	31%
Medical Records and Health Information Technicians	13%
Radiological Technologists	12%
Respiratory Therapists	23%

Note. Data obtained from Bureau of Labor Statistics (n.d.).

*Combines more than one profession.

Complicating Factors

Complicating the allied healthcare workforce shortage are four factors the HWC has identified. The factors are (1) funding shortfalls, (2) lack of qualified instructors, (3) clinical site constraints and shortages, and (4) lack of student awareness and interest in pursuing allied health careers (HWC, 2005).

Funding Shortfalls

The first issue is a lack of funding for healthcare programs that are among the most expensive to operate. The expense can be attributed to durable equipment needs (cardiac monitors, simulation technology, etc.), use of large quantities of disposable supplies (gloves, alcohol swabs, medical tape, etc.), and generally smaller class sizes with more lab assistants

needed to supervise skill practice adequately. ABE measures may further increase the cost of running allied health programs.

Qualified Instructors

This shortage of instructors is not limited to faculty only. The shortfall also applies to lab/skills assistants, exam monitors, and preceptors at clinical sites. Many of these individuals can earn more money in their primary allied health provider jobs, and almost certainly by picking up overtime shifts in their clinician roles. Finding qualified instructors may be even more challenging in out-state Minnesota, where educational attainment levels are markedly lower than in metropolitan areas in spite of an overall all increase in the level of education (U.S. Department of Agriculture, 2003). One out-state paramedic program, desperate for a program director with a bachelor's or higher degree, ended up finding a retired medical doctor to fill the role.

Table 2 lists the minimum educational requirements by discipline as available from various accreditation bodies. Because there are no accreditation requirements for Emergency Medical Technician (EMT), Nursing Assistant, or Medical Records and Health Information Technology (HIT), data for those requirements was gained from the Minnesota State minimum qualifications guidelines.

Table 2

Minimum Credentials for Allied Health Educators by Discipline

	None	Diploma	Associate	Bachelor's	Master's	Doctorate
Dental Assistant						
Program Director				✓		
Faculty				✓		
Dental Hygienist						
Program Director					✓	
Faculty				✓		
EMT						
Program Director	✓					
Faculty	✓					
Paramedic						
Program Director				✓		
Faculty	✓					
Medical Assistant						
Program Director			✓			
Faculty	✓					
Nursing Assistant						
Program Director		✓				
Faculty		✓				
Orthotics & Prosthetics						
Program Director				✓		
Core Faculty			✓			
Non-Core Faculty	✓					
Occupational Therapy Assist.						
Program Director				✓		
Faculty				✓		
Pharmacy Technician						
Program Director			✓			
Faculty	✓					
Physical Therapy Assist.						
Program Director					✓	
Faculty	✓					
Medical Records & HIT						
Program Director			✓			
Faculty			✓			
Radiological Technologist						
Program Director					✓	
Core Faculty				✓		
Non-Core Faculty	✓					
Clinical Coordinator				✓		
Respiratory Therapist						
Program Director						✓
Faculty					✓	

Note. Data obtained from the Accreditation Council for Occupational Therapy Education (2018),

Accreditation Council for Pharmacy Education (2016), Commission on Accreditation for Respiratory Care (2015), Commission on Accreditation for Physical Therapy Education (2016), Commission on Dental Accreditation (2018a, 2018b), Committee on Accreditation of Education Programs for the Emergency Medical Services Professions (2015), Joint Review Committee on Education in Radiologic Technology (2013), Medical Assisting Review Board (2015), Minnesota State (n.d.), and the National Commission on Orthotic and Prosthetic Education (2018).

Clinical Sites

Depending on the allied health discipline, there may be differing nomenclature on the term, clinical site. For the purposes of this paper, clinical site is defined as a location where the allied health student applies their knowledge and interacts with live patients and other healthcare professionals. This experience includes, but is not limited to, locations such as hospitals, clinics, and ambulances.

Since 2012, I have served as an accreditation site visitor for the Committee on Accreditation of Education Programs for the Emergency Medical Services Professions (CoAEMSP). This volunteer position has afforded me the opportunity to review dozens of paramedic programs from across the country. One common theme is a lack of clinical sites, which has become so severe that live endotracheal intubations are rapidly becoming a thing of the past with simulation filling the gap (Kalish, 2013). Multiple allied health programs I have spoken to also state that, similar to issues in medical and nursing schools (Erikson et al., 2013), there is a shortage in clinical sites.

An additional barrier to minority students may be clinical constrictions because of religion, disability, etc. One program reported two separate barriers, which included (1) difficulty in accommodating a student wearing a skirt (for religious reasons) when scrub pants were the norm, (2) resistance to allowing a student who has a medical assistance dog to identify when her blood sugar is low. Employers often state they want diversity in advisory committee meetings, yet they do not know what to do with that diversity when it arrives at their facility.

Awareness and Interest

Students may not understand the nuances of a particular job or have an unrealistic expectation of what the coursework entails. HIT and radiologic technician faculty attribute attrition in her program to not understanding the rigor of the program and not understanding what the career entails before enrolling. In EMS the level of rigor increases exponentially when a student progresses from EMT to paramedic. Our experience in EMS is that many students mistakenly think paramedic is just another small step after EMT rather than the transition from a nine-credit course to a program with 53 core credits (credits vary by paramedic program).

Students may also not be aware that a program of study exists. During college open houses and special events, many people are surprised to learn that there is a difference between an EMT and paramedic. Even the Bureau of Labor Statistics (BLS) does not seem to recognize this as they merge data for EMTs and paramedics together, which is misleading to anyone doing research on perspective careers. Similarly, orthotics and prosthetics is merged in the BLS data.

Perna (2018) observes that lack of awareness of the societal value of a given profession may not be understood—especially among the Millennial and Generation Z population. Further, people may not realize other careers a given profession may segue or branch into (p. 111-131). A student obtaining a credential in an allied health profession has many future options they may be unaware of, such as education, management, quality assurance, medical sales, etc.

Interest in the allied health fields is another difficulty. The median wage for a registered nurse is \$33.65 per hour and \$70,000 annually (BLS, n.d.). Overall, the allied health professions—except dental hygiene—pale in comparison (see Table 3). When I visit high school classrooms, staff a table at open courses, and conduct public relations events, prospective students often report their parents are encouraging them to go to medical school or to become a

nurse. When I ask the few minority students who enroll in the paramedic program why there are not more people in the program from their community, the answers are interesting. Students who are Hmong observe that their elders are pivotal and need to be included in recruitment efforts. Latina/o students often advise that they did not know the EMS field was an option for them and is not discussed as such in their communities.

Table 3 displays the median hourly and annual salaries for various allied health professions. I used an industry survey to determine the salaries for EMTs and paramedics because the BLS combines these professions, which have markedly different pay rates. It should be noted that EMTs and paramedics are two of the few professions where worker sense of altruism factors into lower wages and even volunteering their time. This factor heavily impacts salary data.

Table 3.

Median Hourly and Annual Wage by Profession

Allied Health Profession	Hourly	Annual
Dental Assistants	\$18.09	\$37,360
Dental Hygienists	\$35.61	\$74,070
Emergency Medical Technicians *	X	\$36,874
Paramedic*	X	\$46,396
Medical Assistants	\$15.61	\$32,480
Nursing Assistants	\$13.23	\$27,510
Orthotist and Prosthetists	\$31.85	\$66,240
Occupational Therapy Assistants	\$27.25	\$56,690
Pharmacy Technician	\$15.26	\$31,750
Physical therapy assistants	\$22.56	\$49,920
Medical Records and Health Information Technicians	\$18.83	\$39,180
Radiological Technologists	\$28.88	\$60,070
Respiratory Therapists	\$28.71	\$59,710

Note. Data obtained from Bureau of Labor Statistics (n.d.). for all professions except EMT and paramedic, which was obtained from the *Journal of Emergency Medical Services* (Washko & Ragone, 2017). *Median not available.

Generational Considerations

Healthcare is heavily influenced by the demographics of the various generations, their opportunities, learning styles, and work philosophy. The four most influential generations at present are the Baby Boomer, Generation X, Millennials, and the up and coming Generation Z.

Baby Boomers

The Baby Boomer Generation, born between 1946 and 1964, began reaching the traditional retirement age of 65 in 2011. This means that from 2011 until 2030 approximately 10,000 Baby Boomers will reach retirement age every day (Cohn & Taylor, 2010). This has profound implications for jobs in the medical professions for two reasons. The first implication is the mass retirement of Baby Boomers working in healthcare. The second is an increased demand for healthcare related services from those now attaining senior citizen status.

Generation X

Generation X, born between 1965 and 1980, is sandwiched between the Baby Boomers and the Millennials and is small in comparison to both of those generations. The U.S. Census Bureau estimates that it will not be until the year 2028 that Generation X will be the same population size—approximately 65 million—as the Baby Boomers (Fry, 2018). This generation will start reaching the traditional retirement age of 65 in the year 2030. If we account for paramedics and emergency medical technicians employed in the fire service—that has a traditional retirement age of 55—retirements of those healthcare providers will begin as early as 2020. Coupled with the small number of people in this generation, earlier retirements among firefighters will have a larger effect. Other allied healthcare professions are largely not affected by an earlier retirement age.

Millennials

The Millennial Generation, born between 1981 and 1995, is poised to become the largest generation in the year of this report—2019 (Fry, 2018). In 2016, the Millennials became the largest population in the workforce, which means they are over a third of the workforce at present (Pew Research Center, 2018). It is predicted that Millennials will rotate through many positions and organizations, lending to significant turnover in the workplace (Schwabel et al., 2015). Active engagement in learning, rather than being subject to a lecture, is a key factor in educating Millennials (Schullery, 2013).

Generation Z

Generation Z are those born after 1995 and whose generational boundaries are yet to be definitionally set. This generation will make up approximately 20% of the workforce by 2020 (Sodexo, 2018) and will fill almost every entry-level position by 2030 (Al-Asfour & Lettau, 2014). This generation is the most diverse generation of any (U.S. Census Bureau, 2018). Unfortunately, minority racial/ethnic groups are among the least educated, which means that unless the educational situation is improved for this generation, the skills of the U.S. workforce will likely decline over the next twenty years (Kelly, 2005).

Immigrant Population

Future population growth in Minnesota is projected to center on immigration, with the population of foreign born residents expected to over double from the 2016 population of 428,000 by 2060 (Allen, 2017). The two largest immigrant population in Minnesota are those coming from African and Asian nations (p. 13). An area that many programs—HIT, EMS, medical assisting, and dental hygiene—identified as a barrier is language skills. As opposed to HIT, medical assisting, and EMS; dental hygiene states the problem is not during the program itself, but rather when the student goes to take the written credentialing exam. This barrier is

more difficult for those whose native language is not Romance-based because medical terminology prefixes, roots, and suffixes are all derived from Latin. It is important to note that, because of inequities, culturally and linguistically diverse students of color traditionally have underdeveloped study, reading, and writing skills (Boykin, Tyler, & Miller, 2005).

Interestingly, there may be a barrier caused by faculty misunderstanding cultures different than their own, which causes them not to conduct outreach to various populations. In the way of an example, I was invited to Lincoln International High School in Minneapolis to talk to the students about EMS. The school is for recent immigrants, some of whom are in their early 20s. The vast majority of the students are from Somalia and are Muslim.

Many of the students were unfamiliar with EMS as it does not exist in their countries of origin in the same form it does in the United States. As a result, the majority of students I encountered were interested in being a medical doctor (MD) or nurse—the two healthcare professions for which they were most familiar. Having been told many things about people of the Muslim faith practicing medicine, I approached the principal of the school to determine whether these were rumors rooted in fact or fiction. I felt I knew the answers already but needed to hear them straight from the source. I soon found myself huddled in the principal's office with a half dozen random students she pulled in from the hall. The following are the questions I posed, and answers received.

Q: Are Muslim men prohibited from delivering babies?

A: No, but we may not want to because it is messy.

Q: Are Muslim women allowed to interact with male patients alone in the back of an ambulance?

A: Yes.

Q: If a practicing Muslim is on an ambulance and it is time to pray, would they stop everything they are doing until they finish praying?

A: No.

As it turns out, there is no merit to these perceived barriers.

ABE Models

There are six college transition models commonly cited. These include advising, GED+, English as a Second Language (ESOL), career pathways, and college preparatory (Zafft, Kallenbach, & Spohn, 2006). These six models are general and there are many permutations among institutions of higher education.

Advising

This model consists of information dissemination and individual, as opposed to group, advising. This model incorporates a variation of services—differing in intensity—from institution to institution and even internally from program to program (p. 15).

Dissemination of information about admissions and the program often includes presentations or sessions at designated student success days, open houses, tables at conferences, and scheduled visits to high school classrooms, community centers, civic groups, etc.

Individual advising can take many forms. A counselor or academic advisor may receive an assigned number of students—current or prospective—in particular programs. The advisor then becomes the assigned go to person for the student throughout their academic career. My own program's experience is that counselors are being replaced by less expensive academic advisors. Because of the lower pay and entry level nature of the advising position, it is a stepping stone to other jobs and academia and results in a revolving door of incumbents. As a result, advisors are not familiar with our program's nuances and frequently give incorrect or misleading

advice. To address this, we have assigned each of our students a paramedic faculty member for one-on-one advising throughout the program. We also go into lower level EMS courses and offer one-on-one advising to those wishing to progress further in the program.

GED+

This model incorporates academic/student success/study skills to prepare the student for both the general education development (GED) exam and postsecondary education. This model may incorporate dual or concurrent enrollment in both the GED program and postsecondary courses (p. 18). I am unaware of this type of program being utilized in Minnesota for allied health programs, however, multiple community and technical colleges in Kentucky offer a GED+ program in connection with programs in nursing assisting, phlebotomy, pharmacy technician, medical reception, EMT, and electrocardiogram technician (GED+Plus, n.d.).

ESL

This model may be referred to as English as a Second Language (ESL) or English for Speakers of Other Languages (ESOL). The main goal of this model is to provide non-native English speakers the language skills necessary for higher education (Zafft, Kallenbach, & Spohn, 2006).

Career Pathways

There are four distinct features of this model; (1) basic education and skills are contextualized to a specific profession, (2) there are multiple levels of instruction that ladder to the next, (3) curriculum is divided into modules that are recognized by a given industry, and (4) support is tailored to the needs of the student, such as math or reading (p. 24). A program called

Integrated Teaching and Education (IET) uses the career pathways model and then partners with employees and their employers to confer new skills (Bergson-Shilcock, 2019).

College Preparatory

This model consists of (1) instruction to bridge gaps in education between high school or the GED and college, (2) a college-like learning environment complete with expectations and format, (3) counseling/advising, and (4) cohorts of students or a learning community (Zafft, Kallenbach, & Spohn, 2006).

Findings

Although the sample size is small, I believe the results of the questionnaire (see Appendix), buttressed with a literature search and my interactions over many years of interaction and discussion with faculty within and external to my field, reveal some important insights about allied health students.

Respondents

Table 4 displays the respondents and professions they represent. All respondents work(ed) at combination community and technical colleges, and all served in a dual program director/faculty role. Two are retired within the last three years. I will use the assigned designator to identify the respondent throughout this document.

Table 4.

Respondents Represented

Program	Designator	Role/Status
Dental Hygiene	DH1	Retired Program Director/Faculty
Emergency Medical Technician	EMT1	Program Director/Faculty
Health Information Technology	HIT1	Program Director/Faculty
Health Information Technology	HIT2	Program Director/Faculty
Medical Assistant	MA1	Program Director/Faculty
Paramedic	Para1	Program Director/Faculty
Radiologic Technician	RadT1	Retired Program Director/Faculty

Quantitative

Table 5 displays the causes of attrition based on the quantitative results of the questionnaire listed in descending order. An unexpected finding is that lack of understanding of the profession and rigor of the program is the largest problem area identified.

It is also interesting that critical thinking is an identified problem area. One program (HIT1) has Minnesota Transfer (MnTC) goal two courses in some of their offerings and reports no issues with critical thinking. The remainder of the respondents have no goal two courses offered at their institution as, according to the course catalog, it is “fulfilled automatically when all other MnTC goals are met.” Thus, career and technical education faculty rely on liberal arts faculty to teach critical thinking within the confines of their courses—a practice I am dubious about happening to any helpful extent. See Table 9 for comments relating to all of the attrition areas.

Given that 24 million of the 36 million working adults have foundational education skills gaps (Bergson-Shilcock, 2019), it is not surprising that math, reading, and writing are among the causes of attrition identified.

Table 5.

Causes of Attrition Among Allied Health Programs (N=7)

Attrition Reason	<i>n</i>	%	Adjusted %	Programs Reporting
Affective Skills	6	86%	N/A	EMT1, HIT1, HIT2, MA1, Para1, RadT1
Misunderstand Rigor	5	71%	N/A	EMT1, HIT1, HIT2, RadT1
Language	4	57%	N/A	DH1, EMT1, HIT1, MA1
Reading/Writing	4	57%	N/A	EMT1, H1, MA1, RadT1
Critical Thinking	4	57%	N/A	EMT1, HIT2, Para1, RadT1
Socioeconomics	4	57%	N/A	EMT1, H1, H2, Para1
Mathematics	3	43%	60%	H2, Para1, RadT1

Note. EMT1 and DH1 report little to no math in their curriculum, which makes their adjusted percentages higher.

Table 6 reveals that English as a Second Language students are the largest area of concern. Those with mental health issues as a concern may be underreported or not thought of in the context of the questionnaire. Researchers conducting the National College Health Assessment found that, within a 12-month period, 62.3% of students felt overwhelming anxiety, 41.4% were so depressed it was difficult to function, 11.3% seriously considered killing themselves, and 1.9% attempted suicide (American College Health Association, 2018).

Table 6.

Populations of Concern (N=7)

Population	<i>n</i>	%	Programs Reporting
ESL students	5	71%	DH1, EMT1, HIT2, MA1, Para1
Those with mental health issues	3	43%	EMT, HIT2, Para1
Recent high school graduates	1	14%	RadT1
Working mothers	1	14%	HIT2
Female students	1	14%	Para1

Table 7 relays the resources respondents are using to assist their students. It comes as no surprise that faculty making themselves available after class is used by all.

Table 7.

Resources Used to Navigate Pinch-Points (N=5)

Resources	<i>n</i>	%	Programs Reporting
Faculty after class	5	100%	EMT1, HIT1, HIT2, MA1, Para1
Student Support Center	4	80%	EMT1, HIT1, MA1, Para1
Disability Center	4	80%	EMT1, HIT2, MA1, Para1
Lab Assistants outside of class	3	60%	EMT1, MA1, Para1
Lab Assistants within class time	3	60%	EMT1, MA1, Para1
ESOL Center/Language Lab	2	40%	HIT1, MA1
Career Services	2	40%	HIT2, MA1
Tutors not specifically linked to classes	1	20%	MA1
Peer Tutors (fellow students)	1	20%	Para1
Math Resource Center	1	20%	MA1
Writing Center	1	20%	HIT1
Tutors linked to classes	0	0%	

Science Resource Center	0	0%	
Industry Mentors in Class	0	0%	
Adult Basic Education (ABE) outside courses	0	0%	
ABE Educator comes to the classroom	0	0%	

Note. DH1 and RadT1 abstained as they are not aware of current practices.

When asked what resources not currently available were desired, tutors and ABE services were in the top five (see Table 8). Interestingly, some of these resources are available at the various respondent's institutions, however, they are not aware of them or wish they could tap into them.

Table 8.

Desired Resources (N=5)

Resources	n	%	Programs Reporting
Tutors linked to classes	3	60%	HIT1, HIT2, MA1
Adult Basic Education (ABE) outside courses	3	60%	EMT1, MA1, Para1
ABE Educator comes to the classroom	3	60%	EMT1, MA1, Para1
Tutors not specifically linked to classes	2	40%	HIT1, HIT2
Peer Tutors (fellow students)	2	40%	HIT2, MA1
Industry Mentors in Class	2	40%	HIT2, Para1
ESOL Center/Language Lab	1	20%	EMT1
Student Support Center	0	0%	
Math Resource Center	0	0%	
Science Resource Center	0	0%	
Writing Center	0	0%	
Disability Center	0	0%	
Career Services	0	0%	
Lab Assistants outside of class	0	0%	
Lab Assistants within class time	0	0%	
Faculty after class	0	0%	

Note. DH1 and RadT1 abstained as they are not aware of current practices.

Qualitative

Table 5 displays the qualitative information gleaned from the questionnaires. These responses bring clarity to the quantitative information.

Table 9.

Commentary on Reasons for Attrition

Reason	Commentary (Program in Parentheses)
Affective Skills	<p>“Students tend to be lacking the basic skills that are needed to be successful in the work place (attendance issues, maturity level, integrity and accountability)” (MA1).</p> <p>“Younger students closer to high school lack maturity, recognition of ethical situations, interpersonal skills, and are non-help seeking. Employers say there are problems with soft skills” (RadT1).</p>
Misunderstand Rigor	<p>“...some discover they need to take a reading class or improve their keyboarding or technical skills before they can register for the OFFT-Med classes” (HIT1).</p> <p>“They aren’t required to meet with the HIT advisor prior to registering for classes to discuss what to expect. Those in HIT don’t know what ‘HIT’ is about” (HIT2).</p> <p>“Didn’t like the volume of work—the rigor—in anatomy and positioning 1” (RadT1).</p>
Language	<p>“Language is not a problem for non-native speakers until they take their written national board exam” (DH1).</p> <p>“Most students who speak English as a second language struggle, because they have to fully understand and apply medical terminology and are still learning English. They have to read a report and know multiple terms for the procedures and diagnoses because it may be called one thing in the report but something else in the code book” (HIT2).</p>

	<p>“Some only speak English here at college and go home and speak their native language. They not only are learning our language but the medical terminology as well. They also run into our slang at times (we try to defer from that in class) and on tests, especially national certification tests, they have problems understanding what the question is asking, however if you asked them in a different way, they understand the concepts” (MA1).</p>
Reading/Writing	<p>“Some students discover they do not have the reading comprehension skills or attention-to-detail that is required to do well in the medical coding classes” (HIT1).</p> <p>Students come into the program after they have successfully passed ENGL, however the students basic writing skills as well as grammar and sentence structure skills are extremely lacking. This causes students to not be successful in competencies in their initial clinical I course (MA1).</p> <p>“Take ENGL and earn A’s, but don’t have good reading or writing skills” (RadT1).</p>
Critical Thinking	<p>“...a lot of critical thinking and proving that they actually learned their medical terminology the previous year. It also takes a lot of practice and they don’t put in enough time to learn it properly” (H2).</p> <p>“Lack critical thinking. Memorize, but no application” (RadT1).</p>
Mathematics	<p>“Little to no requirement for math attracts students” (DH1).</p> <p>“Math statistics isn’t currently required but will be in the next 2 years (our program is accredited and it’s a new upcoming requirement). Our current students struggle hard with math and often take the goal 4 Logic course instead. I foresee stats being a pinch-point in the future” (HIT2).</p> <p>“Take math and earn A’s, but don’t have good math skills” (RadT1).</p>

	<p>“We met with math faculty teaching medical dosages (MATH 1000) and gave them blunt needles, syringes and medication vials filled with water. We also provided a list of medications used in our profession. Students repeatedly informed me that MATH 1000 was not relevant because they never got to draw anything up or practice with medications they would be using as paramedics” (Para1).</p>
<p>Socioeconomics</p>	<p>“Just two weeks ago we had a student who was sleeping in her car and showering at the YMCA before class. Mental health was also a factor with a recent hospitalization for a suicide attempt” (Para1).</p> <p>“Two semesters ago we had an immigrant student whose lease was not renewed, putting her and her parents out on the street. At that same time, we had another student—a single mother—who felt she needed to choose between paying the electric bill and tuition. I had given this student a pair of uniform boots earlier because she could not afford the ones we required” (Para1).</p> <p>“It is not uncommon that students are late for class due to inadequate public bus service” (EMT1).</p>

Recommendations

The following is a list of 15 recommendations that draw on a number of the models and pertain to course design, learning support, support of underserved populations, ancillary services, and the mitigation of socioeconomic factors.

- 1) Aggressive pursuit of opportunities to conduct outreach to underrepresented groups.

The target market varies somewhat by profession. This may include open houses, traveling presentations, and special events. Ensure that level of rigor is communicated effectively.
- 2) Develop GED+ programs for entry-level courses to simultaneously enable the student to earn a GED and marketable profession. i.e. EMT, nursing assistant, phlebotomy.

- 3) Work with Academic Affairs and Standards Curriculum Committees to make ESL courses satisfy the goal six (Humanities and Fine Arts) or eight (Global Perspectives) requirement of the Minnesota Transfer Curriculum (Minnesota Transfer, n.d.). The premise of this recommendation is that ESL is learning about a foreign language and culture, no different than a native English speaker learning Chinese or Russian. Immigrant students should receive proper college credit for their efforts that count toward their degree. Consistent with Dweck's (2006) research on mindset, this gives students a victory and reinforces a positive mindset.
- 4) Incorporate culturally responsive andragogy into courses to accommodate a diverse array of learners, as outlined by Hammond (2015).
- 5) Hire and retain paid and volunteer skill assistants, exam monitors, lab assistants, tutors, etc. that are representative of the populations struggling in given programs. This provides positive role models and reinforces the fact that people from their demographic can succeed (Steele, 2010).
- 6) Develop specific goal two (critical thinking) or take steps to ensure that critical thinking concepts are woven into curriculum. It is my experience there are many different interpretations as to what critical thinking entails and to which academic domain it belongs. My contention is that no academic discipline has a monopoly on critical thinking. I see critical thinking education as containing theory and how to apply that theory through the use of tools for reasoning. Three good resources are *deBono's Thinking Course* (deBono, 2005), *The Thinker's Toolkit: Fourteen Powerful Techniques for Problem Solving* (Morgan, 1998), and *Thinking: An*

Interdisciplinary Approach to Critical and Creative Thought (Kirby & Goodpaster, 2007).

- 7) Create an ESL course that orients students to the allied health fields and includes medical terminology. This could be team taught by an ESL and allied health faculty.
- 8) Build specific and measurable affective learning objectives into discipline specific content. In the way of an example, my program grades on attendance, uniform appearance, professionalism, and reception to feedback. The affective principles of learning from Carnegie's (1998) book, *How to Win Friends and Influence People* may be a good resource.
- 9) Partner with liberal arts faculty to develop general education courses that are contextual in nature. i.e. An English composition course that writes on topics related to the Allied health discipline one is going into. Include psychomotor and affective objectives when possible. Another option may be a learning community whereby a liberal arts course is paired with an allied health core course.
- 10) Weave ABE services into pinch-point courses/topics. Have ABE instructors work with students outside of class or within the classroom. This may include instructors specializing in reading, writing, or math.
- 11) Develop a tutor linked to courses program for allied health. These may be allied health student peers or volunteer or paid allied health professionals currently working in the field or recently retired.
- 12) Consistent with Hammond's (2015, p. 32) assertion that "poverty is not a culture," provide robust services to mitigate the effects of poverty. Similar to what I have observed at my own institution and LaGuardia Community College, (the most

- student-centered allied health programs I have ever visited), as well as recommendation from Beegle (2007)—aid with food, clothing, shelter, transportation, emergency funds (i.e. car problems, electric bill, etc.).
- 13) Develop initiatives to deliver mental health care and allow faculty, staff, administrators, and students to recognize mental health issues so that assistance can be made available. Examples may include formation of a mental health committee, obtaining a Garrett Lee Smith suicide prevention grant, having a certified College and University Suicide Prevention Specialist available. Helpful courses may include Mental Health First Aid (National Council for Behavioral Health & Missouri Department for Mental Health, n.d.), safeTALK, ASIST, QPR, CALM (Suicide Prevention and Resource Center, n.d.).
- 14) Establish a faculty advisor that each student is assigned to through their program of study and meet periodically to discuss progress, share challenges and successes, and provide resources as needed.
- 15) Work with employers to establish pathways from entry level positions to higher level in the same field. Capitalize on tuition reimbursement programs when possible.

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Appendix

Allied Health Program Questionnaire

- 1) Are there any “pinch-points,” that is topical areas and/or specific courses that cause attrition in your programs? If so, what are those pinch points?

Continue if pinch-points are identified. If not, no need to go further.

- 2) For each pinch-point, to what you attribute the attrition? This may include, but not be limited to math, reading, language, study skills, or affective behaviors.
- 3) Are there populations within your class that retention is a concern? If so, what are those populations and why do you believe they struggle more?
- 4) Employability consists of job seeking skills, being hired, and keeping the position after hire. How would you describe the overall employability of your students? Are there any barriers to their successful employability at any phase?
- 5) In the pinch-point areas you identified, how do you currently work with students having difficulty? Check all that apply.

___Tutors linked to classes

___Industry Mentors in Class

___Tutors not specifically linked to classes

___Disability Center

___Peer Tutors (fellow students)

___Career Services

- | | |
|---|---|
| <input type="checkbox"/> Student Support Center | <input type="checkbox"/> Lab Assistants outside of class |
| <input type="checkbox"/> ESOL Center/Language Lab | <input type="checkbox"/> Lab Assistants within class time |
| <input type="checkbox"/> Math Resource Center | <input type="checkbox"/> Faculty after class |
| <input type="checkbox"/> Science Resource Center | <input type="checkbox"/> Adult Basic Education (ABE)
outside courses in math, reading, study
skills, etc. |
| <input type="checkbox"/> Writing Center | <input type="checkbox"/> ABE Educator comes to the
classroom |
| <input type="checkbox"/> Other, Specify | |

6) What resources do you wish you had available that you currently do not? Check all that apply.

- | | |
|---|---|
| <input type="checkbox"/> Tutors linked to classes | <input type="checkbox"/> Industry Mentors in Class |
| <input type="checkbox"/> Tutors not specifically linked to
classes | <input type="checkbox"/> Disability Center |
| <input type="checkbox"/> Peer Tutors (fellow students) | <input type="checkbox"/> Career Services |
| <input type="checkbox"/> Student Support Center | <input type="checkbox"/> Lab Assistants outside of class |
| <input type="checkbox"/> ESOL Center/Language Lab | <input type="checkbox"/> Lab Assistants within class time |
| <input type="checkbox"/> Math Resource Center | <input type="checkbox"/> Faculty after class |
| <input type="checkbox"/> Science Resource Center | <input type="checkbox"/> Adult Basic Education (ABE)
outside courses in math, reading, study
skills, etc. |
| <input type="checkbox"/> Writing Center | <input type="checkbox"/> ABE Educator comes to the
classroom |
| <input type="checkbox"/> Other, Specify | |

Please return this questionnaire to Chris Caulkins at chris.caulkins@century.edu.

Thank you!

