

CHAPTER 2:

TELEMENTAL HEALTH AS A SOLUTION TO THE WIDENING GAP BETWEEN SUPPLY AND DEMAND FOR MENTAL HEALTH SERVICES.

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In press in: Myer, K and C.L. Turvey (Eds.) Telemental Health: Clinical, Technical and Administrative Foundations for Evidence-Based Practice. Elsevier Inc, 2013, pp 11-25.

Abstract

There is a significant shortage of mental health providers relative to demand for mental health services in the United States (U.S.). This chapter reviews the current status and future trends in the available mental health workforce. It then discusses how telemental health (TMH) may address a large and widening gap in care. The chapter focuses on psychiatry, as the most comprehensive data are available for this discipline and telepsychiatry is one of the most frequently requested services through TMH. The supply of psychiatrists has not kept pace with the growth of other physicians over the past few decades. During this time, the demand for psychiatric services has increased markedly. The mismatch between supply and demand is accentuated by a marked variation in geographic distribution of existing psychiatric providers. All indicators suggest that these patterns will continue, i.e., an ongoing increasing demand for psychiatric services, and, at best, a steady and maldistributed supply. More efficient uses of existing psychiatric resources is going to be vital to addressing this widening supply and demand gap, and telepsychiatry is likely to be part of any strategic solution. Comparable workforce data pertaining to psychologists suggests the gap in care pertains to the range of mental health disciplines.

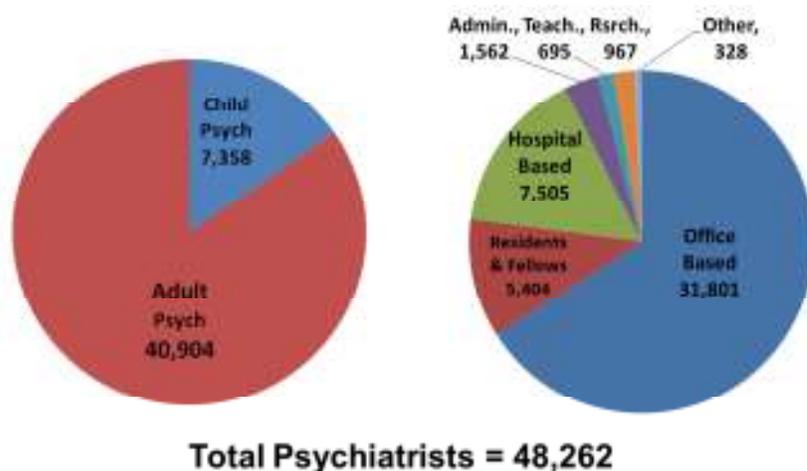
Keywords: Telemental health, telepsychiatry, telepsychology, telehealth, mental health workforce, redistribution of workforce, videoteleconferencing, videoconferencing

Workforce Shortages in Mental Health: The Example of Psychiatry.

What is the current supply of psychiatrists in the U.S.?

As of 2010, there were just under 50,000 psychiatrists practicing in the United States (U.S.). (note: source of all data in Figures 1-5 is the American Medical Association, 2010)(1). This makes psychiatry the 6th most common specialty in medicine (behind internal medicine, pediatrics, family practice, obstetrics/gynecology and anesthesia). Figure 1 shows how psychiatrists are distributed in terms of specialty and practice setting. Approximately 18% of U.S. psychiatrists are certified in Child and Adolescent Psychiatry. More than 11% of all psychiatrists are currently in residency or fellowship training. About three quarters (78%) are primarily in office-based outpatient settings.

Figure 1: Specialty and Treatment Setting for Psychiatrists in the United States-2010



In order to put these numbers into a meaningful context, it is necessary to look at trends over time, how these trends compare to the numbers of other physicians, and most importantly, how the trends over time correspond with trends in utilization of services.

Rate of growth in psychiatrists and all physicians over time

Figure 2 shows the numbers of general and child psychiatrists over the past 40 years and Figure 3 shows the number of all physicians in the U.S. over the same time period. Several points are worth noting. First, while the increase in all physicians has been relatively constant over this time, the increase in numbers of psychiatrists has flattened out over the past two decades. Second, the rate of growth is substantially lower for psychiatrists than for all physicians (Figure 4). For example, while there has been a nearly 20% increase in the number of U.S. physicians in the past decade, there has been less than a 6% increase in the number of psychiatrists during the same period. Third, growth in child psychiatry has substantially outpaced that of general psychiatry. Specifically, there has been a 20.2% and 69.4% increase in the numbers of child psychiatrists over the past 10 and 20 years respectively, vs. 3.6% and 16.3% for general psychiatrists over those two decades. Finally, as the increase in the numbers of psychiatrists has not kept pace with

that of the increase in the numbers of physicians, the percentage of psychiatrists among physicians continues to fall (Figure 5).

Figure 2: Number of General and Child Psychiatrists in the U.S., 1970-2010

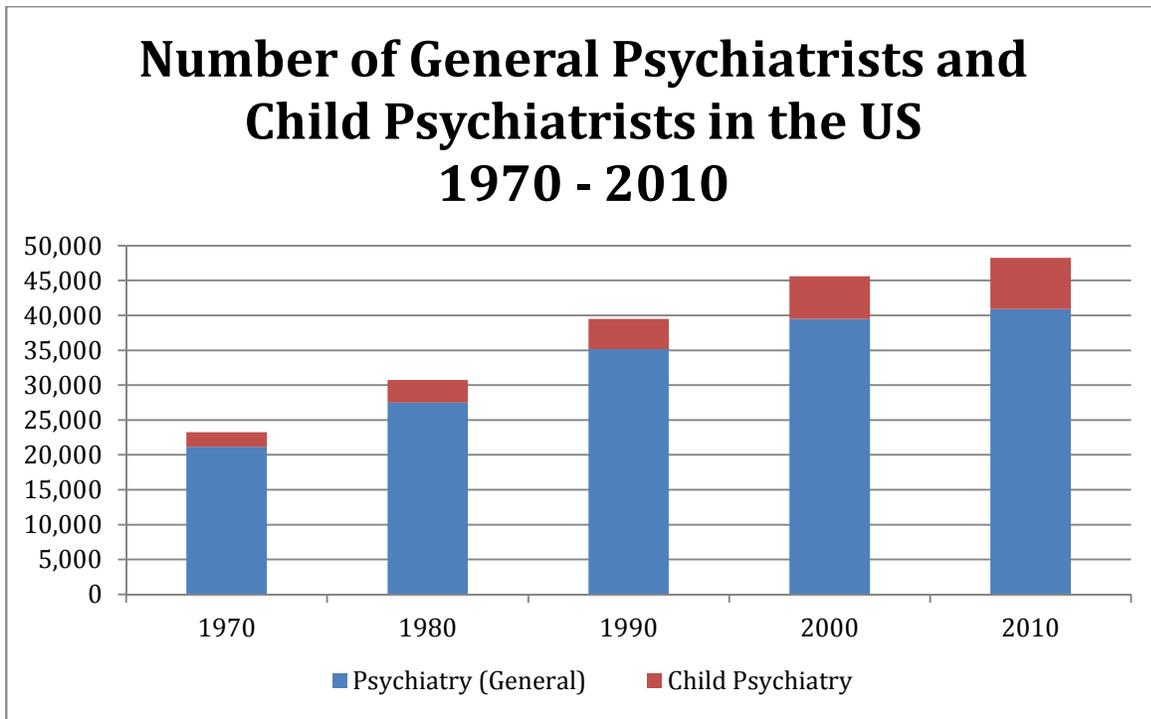


Figure 3. Total Number of Physicians in the U.S. 1970-2010

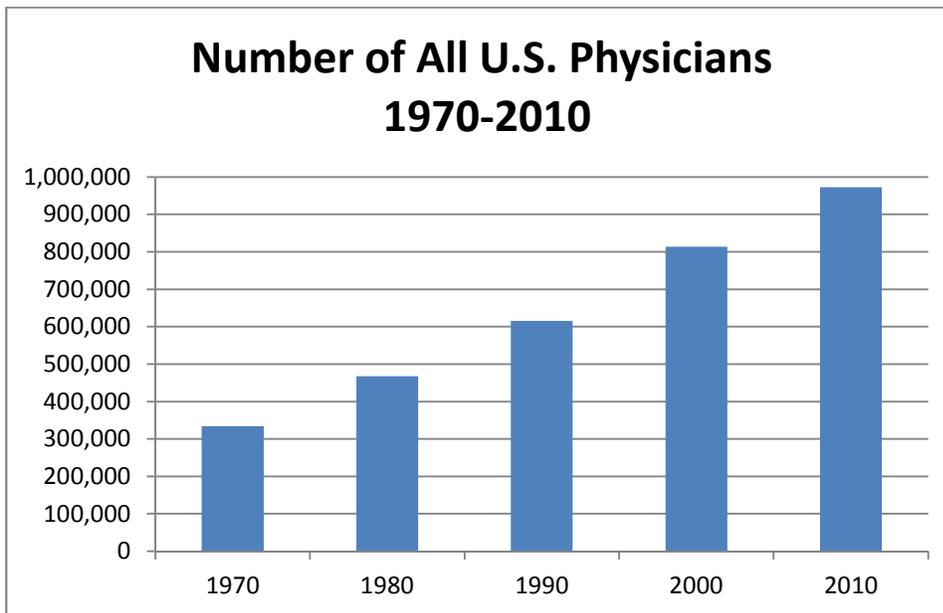


Figure 4: Percent Increase in General and Child Psychiatrists and All Physicians over the Past 4 Decades (2010 vs. 2000, 1990, 1980 and 1970)

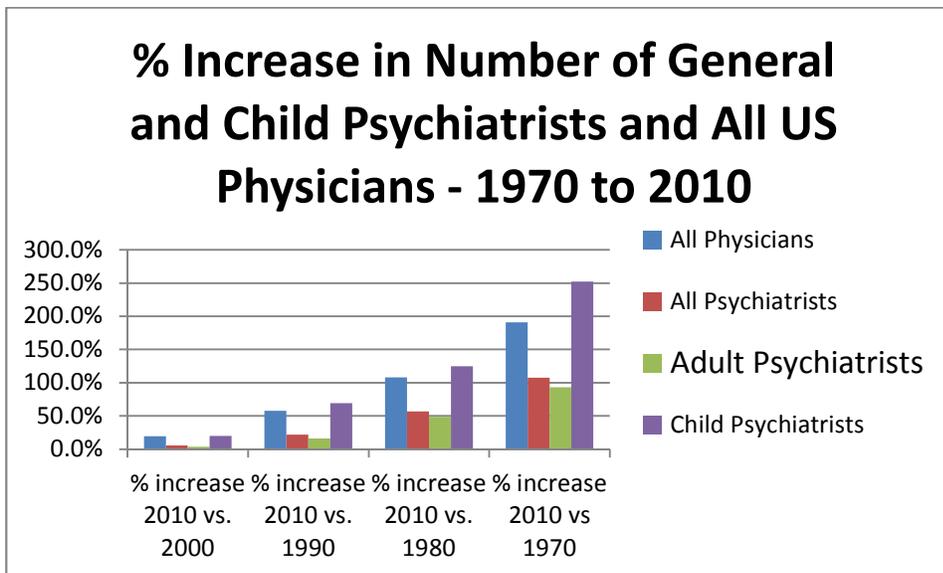
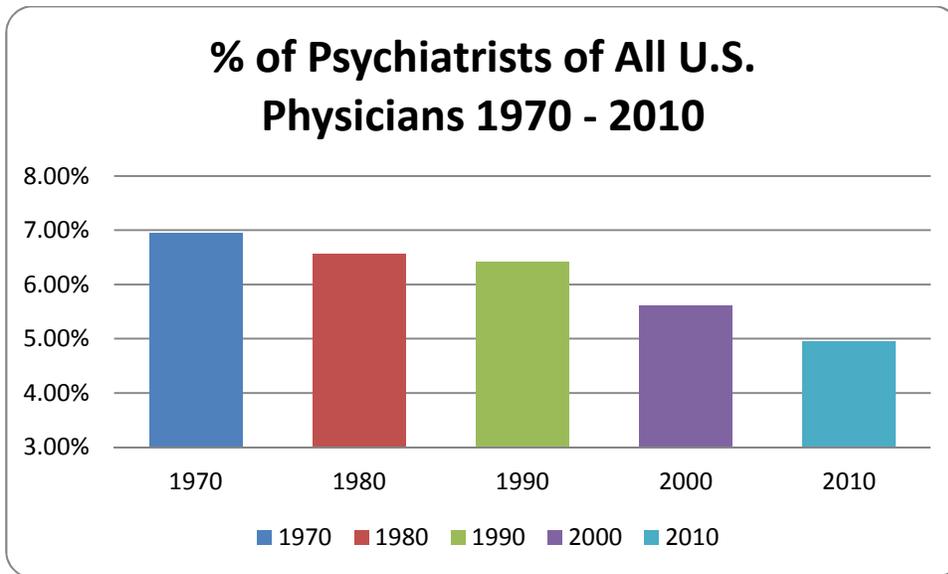


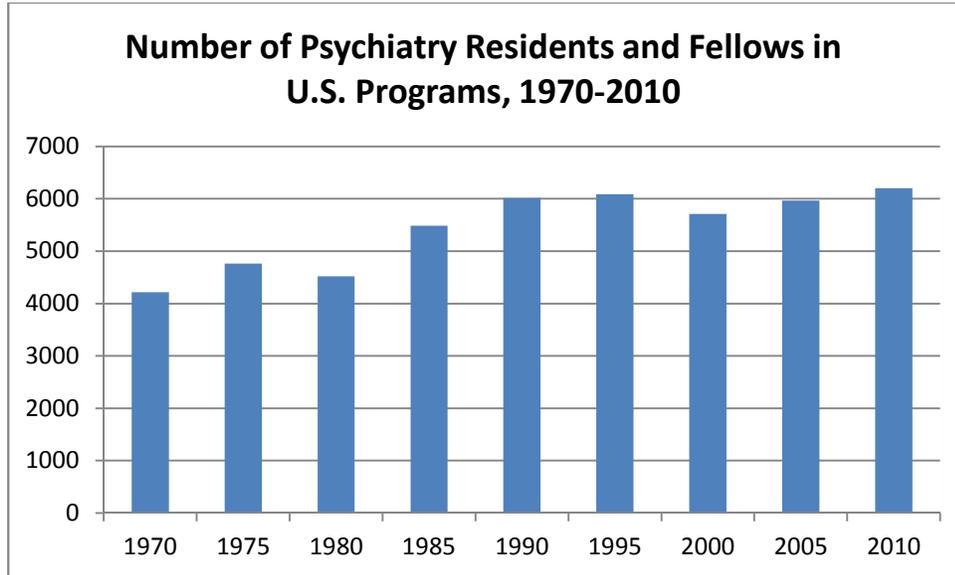
Figure 5: Percent of Psychiatrists of all U.S. Physicians 1970-2010



The psychiatry pipeline: Trends in residency training

As can be seen in Figure 6, the number of psychiatry residents in the U.S. has been essentially flat over the past two decades(2). As the numbers of medical students nationally has increased steadily(3), this reflects an ongoing proportional decrease in the numbers of medical students choosing careers in psychiatry. There has been much discussion, concern and debate about reasons for this, including financial concerns (psychiatry is consistently among the lowest paid of the medical specialties). What is clear from these data is that the number of psychiatrists entering the field, at least those trained in U.S. programs, will not be expected to increase in the foreseeable future.

Figure 6: Number of Psychiatry Residents and Fellows in U.S. programs, 1970-2010



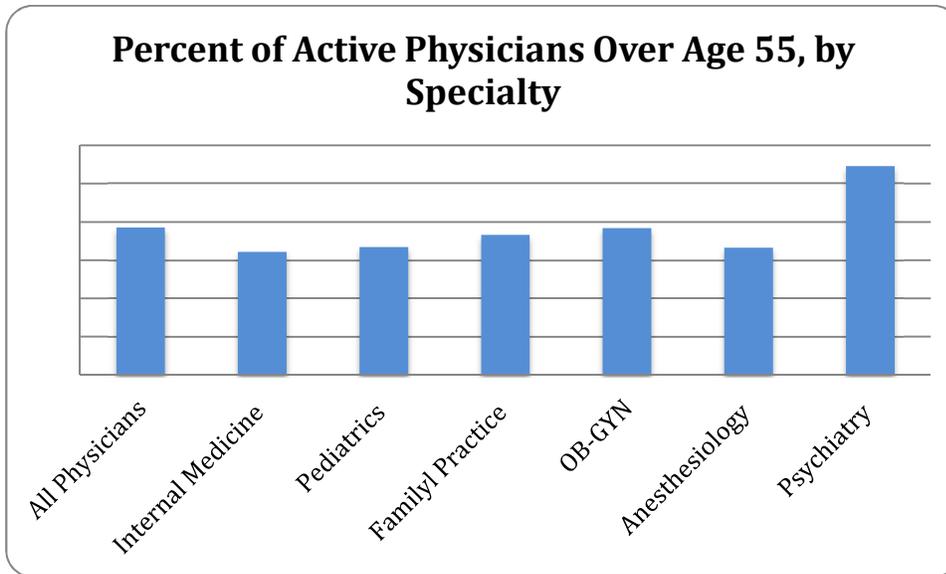
Source:

<http://psych.org/MainMenu/EducationCareerDevelopment/EducationalInitiatives/residentcensus/1011census.aspx?FT=.pdf>

The aging-out effect

Perhaps of greatest concern in predicting the future supply of psychiatrists comes from an analysis of the age distribution of the current psychiatric workforce (4). Psychiatrists as a group are older than their counterparts in almost every other field. Here is a sobering statistic that is easy to remember: *Fifty five percent of all currently practicing psychiatrists in the U.S. are over the age of 55.* As shown in Figure 7, the corresponding numbers for each of the other most common specialty areas are all in the 30 – 40% range. (Across all U.S. physicians, 37.6% are over the age of 55). Indeed, when looking at this metric across all 35 subspecialties categorized by the American Medical Association, psychiatry was second only to preventive medicine in the percentage aged 55 or older. Thus, the majority of current psychiatrists in the U.S. will enter retirement age within the next decade.

Figure 7: Percent of Active Physicians over the Age of 55 by Specialty (top 6 specialties)



Source: <https://www.aamc.org/download/47352/data/specialtydata.pdf>

What is the Current Need or Demand for Psychiatrists in the U.S.?

Estimating the need or demand for psychiatrists and/or psychiatric services requires the modeling of a combination of epidemiological and health services utilization data.

Methodologically sound prevalence estimates of mental illness began in earnest in the early 1980's with the Epidemiological Catchment Area (ECA) study (5). The main finding was that of over 20,000 adults surveyed across five U.S. sites, the estimated annual prevalence rate of having any of the psychiatric disorders included in the study was 28.1% (6). A second key finding was that a minority (28.5%) of those who met study criteria for a mental disorder accessed any kind of treatment.

In the early 1990's, the National Comorbidity Study (NCS) (7) documented findings that were similar to the ECA study regarding both prevalence and treatment for mental disorders, despite some significant methodological differences. In the NCS study of a nationally representative sample of over 8,000 respondents, 29.4% of adults (ages 15 – 54) met criteria for a mental disorder within the previous one year. As with the ECA study, a minority (in this case about 20%) received some sort of treatment for the disorder. The methodological differences between the ECA and NCS studies did not allow for a clear comparison of any changes in either prevalence or utilization of services over time.

To do so, the methods utilized in the NCS study were replicated in a larger sample in the early 2000's (2001-2003). That study, known as the NCS-R (NCS-Replication(8)), remains at the time of this writing the "gold standard" on prevalence of mental disorders and utilization of mental health services nationally. The study involved almost 10,000 completed interviews of a representative nationwide sample of adults ages 18 or older, and included data on illness characteristics such as age of onset, severity and co-morbidity, as well as service utilization data including provider types and frequency(8, 9).

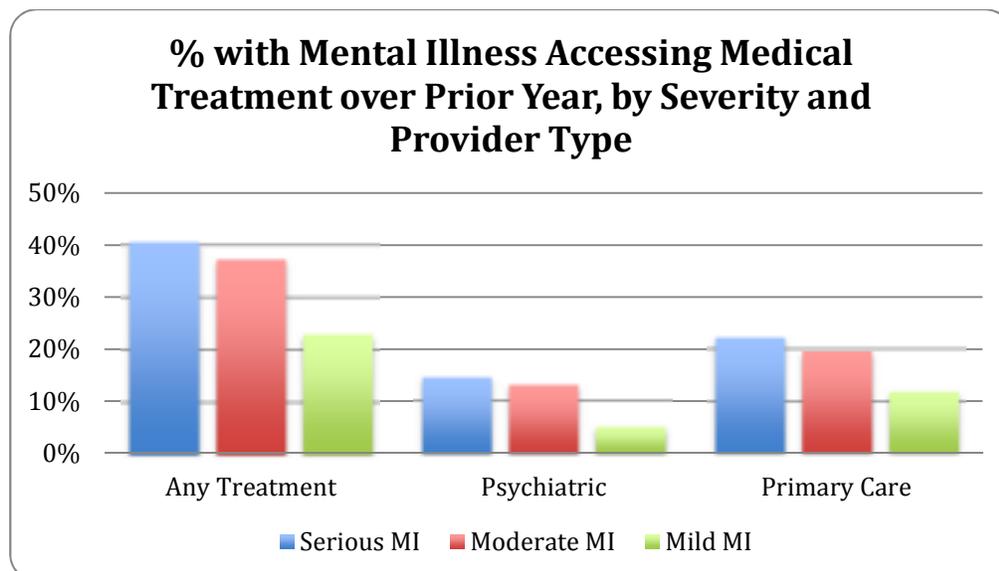
Two key findings emerged from the comparison of the NCS and NCS-R results:

- 1) Prevalence of mental illness did not appear to change over time, with no evidence of an increase. The NCS-R overall prevalence rate was 30.5 % vs. 29.4% ten years previously ($p = 0.52$).
- 2) Rates of treatment increased significantly from 12.2% of the total population in the 1990's to 20.1% a decade later ($p < 0.001$)

Thus, despite no evidence of a change in the underlying rate of mental illness, almost twice as many people were seeking some kind of treatment. There has been much speculation and study as to reasons for this trend which is often attributed to progress in the de-stigmatization of mental illness.

The NCS-R study also detailed the type of providers accessed over the prior year by those individuals diagnosed with mental illness. Strikingly, as shown in Figure 8, less than half of those identified as having a mental illness in that sample accessed any kind of mental health treatment (broadly defined, including both medical and non-medical services)(9). An even smaller proportion accessed medical services, and of those who did, primary care physicians provided more psychiatric services than psychiatrists across all levels of severity of mental illness. This low penetration rate suggests that the actual demand for services may not yet be nearly commensurate with the underlying need.

Figure 8: Percent of Those Identified in the NCR-S Sample with Mental Illness Accessing Mental Health Services over the Prior Year by Severity and Provider Type



Quantifying the need for different kinds of providers of mental health services

In the mid 2000's, the Health Resources and Services Administration (HRSA) commissioned a series of studies to further clarify the need for mental health professionals nationally. The series of resulting studies (10-12) built on the NCS-R prevalence data, and combined this with county level population and workforce data nationally. Using licensure data, they compiled county level estimates of six types of mental health professionals: Psychiatrists, advanced practice psychiatric nurses, psychologists, social workers, marriage and family counselors and licensed professional counselors. They categorized the first two as "mental health prescribers" and the others as "non-prescriber mental health professionals". A variety of data sources were used to examine utilization patterns, including different contributions of primary care physicians as mental health prescribers, allowing for estimates of the amount of time over a given year a person would be likely to spend with both prescribers and non-prescribing mental health professionals. They estimated the utilization of, and need for, mental health services separately for those with and without a "serious." mental illness.

Konrad et al. (2009) (11) found that about half of those with serious mental illness accessed at least one kind of mental health service in the reference year studied. Specifically, those with serious mental illness spent about 10.5 hours per year with a "non-prescriber" mental health professional and about 4.4 hours per year with a prescriber, who might have been a psychiatrist, a psychiatric nurse practitioner or a primary care physician. As expected, those without serious mental illness spent much less time, but nevertheless some time, on mental health needs – specifically, 7.8 minutes and 12.6 minutes per year with non-prescribers and prescribers respectively.

From these data, and taking into account different levels of contributions of primary care physicians, these investigators estimated the overall need for 25.9 psychiatrists / 100,000 adult population. Based on 2010 census data, that translates into a need for over 60,000 psychiatrists, to care only for adults (ages 18 or over). If a similar level of needs is extrapolated to include children, then the corresponding number is just under 80,000.¹ It is noteworthy that these estimates far exceed those developed over 30 years ago by the Graduate Medical Education national Advisory Committee, which was 15.4/100,000. Interestingly, our current supply of 48,000 fits the 30 year old estimate, but is far short of current estimates.

The HRSA-commissioned studies supplied further evidence and quantification of the supply and demand mismatch on a county level. Defining "severe shortage" as over half the estimated need unmet, they reported that over three quarters of all counties in the

¹ <http://www.census.gov/compendia/statab/2012/tables/12s0007.pdf>

Calculations:

$$25.9/100,000 = x / 234,564,000 \text{ (2010 U.S. population age 18); } x = 60,752$$

$$25.9/100,000 = x / 308,746,000 \text{ (total U.S. population in 2010)} \text{ } x = 79,965;$$

U.S. (77%) met criteria for a “severe shortage” of psychiatric prescribers. Of those remaining, only 4% of all U.S. counties appeared to have a supply of psychiatric prescribers equal to the demand. Finally, it is important to recognize that the data summarized above likely represent an underestimate of prevalence in light of several methodological limitations. Most notably, persons who are homeless or institutionalized (either in nursing, psychiatric or correctional facilities), as well as those in the military, tended to be excluded from most of the prevalence estimates.

Also, these studies do not tend to take into account trends in utilization that have occurred more recently than the early 2000’s. However, there is certainly reason to suspect that utilization patterns are indeed continuing to grow. Pharmaceutical data show that Americans are utilizing psychoactive medications at markedly increased rates (13). For example, as of 2005, nearly one out of every ten Americans was taking an antidepressant medication (27 million people), more than double the number taking them a decade earlier. Stimulant medications are being prescribed to adults in rates that were unheard of a decade ago, and antipsychotics are being used as widely beyond psychotic disorders. The more common use of polypharmacy in psychiatry (e.g., augmentation of antipsychotics for mood disorders) and black box warnings on antidepressants in children and adolescents, or higher doses of commonly prescribed selective serotonin reuptake inhibitors (SSRI’s) are likely to cause reluctance among primary care physicians to continue to take responsibility for mental health prescribing.

These factors, along with the implementation of federal and state parity mental health parity laws, increasingly aggressive direct marketing of psychoactive medications to consumers, economic hardships and the toll of two long wars will likely result in an ongoing increase in the demand for psychiatric services in the foreseeable future.

The Distribution of Psychiatrists: The Iowa Example

The final, and perhaps most critical, piece of the supply and demand gap has to do with the geographic distribution of existing psychiatric resources. The author of this chapter has spent his career as a psychiatrist in the state of Iowa which provides the opportunity to describe trends in the psychiatric services gap that appears to be representative of the pattern throughout the country.

As shown in Figure 9, as of 2011, Iowa has 238 actively practicing psychiatrists (14). With a population of about 3 million, this translates to a rate of about 8 psychiatrists/100,000, ranking it in the bottom 5 of states in terms of psychiatrists per capita (1). But an even greater practical problem is that almost a quarter of all of the state’s psychiatrists work in the same building i.e., a large academic medical center. More than half of these are located in just two of Iowa’s 99 counties. More than two thirds of Iowa’s counties have no psychiatrists at all, at least at their primary practice locations.

While “circuit riding”, i.e., spending time in many locations is common and an important contribution to solving this problem, it is still the case that the majority of the state does not have easy access to psychiatrists. Waiting lists are long and growing longer. There is widespread recognition that the situation has reached crisis proportion and stakeholders are coming together to seek alternatives.

hospital emergency rooms. A psychiatric physician's assistant has become one of the primary providers of child and adolescent psychiatric services in a rural corner of the state, with supervision being provided through videoconferencing by University of Iowa faculty.

Yet, despite all of this activity, telepsychiatry has not yet reached the "tipping point", at least not in Iowa where it is arguably needed more than in most places in the country. The use of telepsychiatry to meet service needs is still by far the exception rather than the rule. The numerous telepsychiatry suites sit empty most of the time. Less than 10% of the state's psychiatric workforce has had any telepsychiatry experience whatsoever, and it is not yet a routine part of our residency training programs.

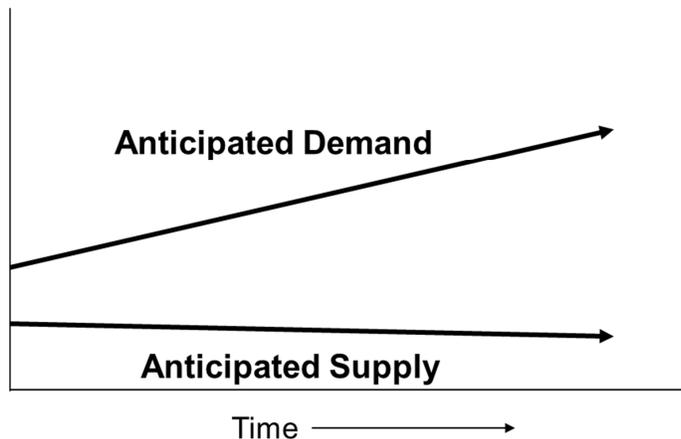
Why not? Some of this can be explained in terms of system inertia. Systems, as well as individuals, tend to do what they have always done despite evidence that the world is changing rapidly. It is possible that most of the inertia in this particular area can be best understood as a direct result of the existing supply versus demand gap described above. That is, most currently practicing psychiatrists in Iowa, no matter what setting they are in, already have more business than they can handle. As such, finding ways to enhance access tends to be low on their priority lists. If, as the evidence presented above would suggest, the need has already outstretched supply, telepsychiatry alone will not substantially change that imbalance. Efficiencies that may be gained with the use of telepsychiatry are likely to be outpaced by the widening supply and demand gap.

That is why of the various efforts currently underway to address the psychiatric workforce shortage in Iowa, two small pilot projects are of particular interest. Both happen to require telehealth.

- 1) In one small effort to address the psychiatric workforce issue, the Iowa legislature in 2005 provided funding to develop and maintain a one year fellowship program in psychiatry for physician's assistants (PA). It is one of two or three programs of its type nationally, and thus far, it has been successful in that each of the PA's who have matriculated through it have gone on to focus in psychiatry. Recently the program recruited what appeared to be its poster-child candidate: A PA who had been doing family practice in one of the most underserved areas of the state for 10 years, and who recognized the acute need for psychiatric services, wanted to obtain training in psychiatry to bring back to his home town. His local health system was highly supportive and eager to hold his job for him through his training year. The problem, however, was that there was no psychiatrist in the area to supervise him once he completed training. With the endorsement of the state's PA licensure board, a model of distance supervision was developed in which the psychiatrists with whom he had trained provided his psychiatric supervision via telehealth. For better or worse (work is underway to look at various quality indicators), that PA-psychiatrist team is now the primary provider of psychiatric services in the area.
- 2) A child psychiatrist based at the University of Iowa has established service agreements with multiple rural pediatric practices to provide psychiatric consultative services to the primary care team. The model is based on the consultation service established at the University of Massachusetts to provide

telephone consultation statewide to primary care physicians and expanded by the University of Washington to supplement telephone consultation with TMH consultation as needed (15, 16). In the University of Iowa service, patients and families are evaluated directly when necessary, but much of the communication is limited to consultation between the psychiatrist and the pediatrician or, in some cases, between the psychiatrist and a care coordinator. There is also a didactic educational element with “lunch and learn” sessions monthly. All of the interactions, the direct patient care, the supervision and the educational sessions, are conducted via telehealth.

These are two examples that illustrate how telepsychiatry is most likely to be able to address the supply and demand gap. The simple algebra presented in this chapter (and illustrated below) is that the substantial gap which already exists between the need and workforce capacity for psychiatric services is predicted to widen over time.



If psychiatrists continue to spend most of their time providing direct care to patients on a one-to-one basis, whether that is via telepsychiatry or same-room care, the visits will be even shorter than they already are, and fewer and farther between. Collaborative, team based, approaches will be necessary in which psychiatrists interact efficiently and effectively with other providers of psychiatric services, including primary care physicians, nurse practitioners and PA's, as well as more innovative members of an expanding mental health workforce (e.g., allied health, consumers and family members). Telepsychiatry can play a critical role in facilitating these approaches, and the degree to which it is successfully exploited to do so may allow for an optimal balance between supply and demand for psychiatric services.

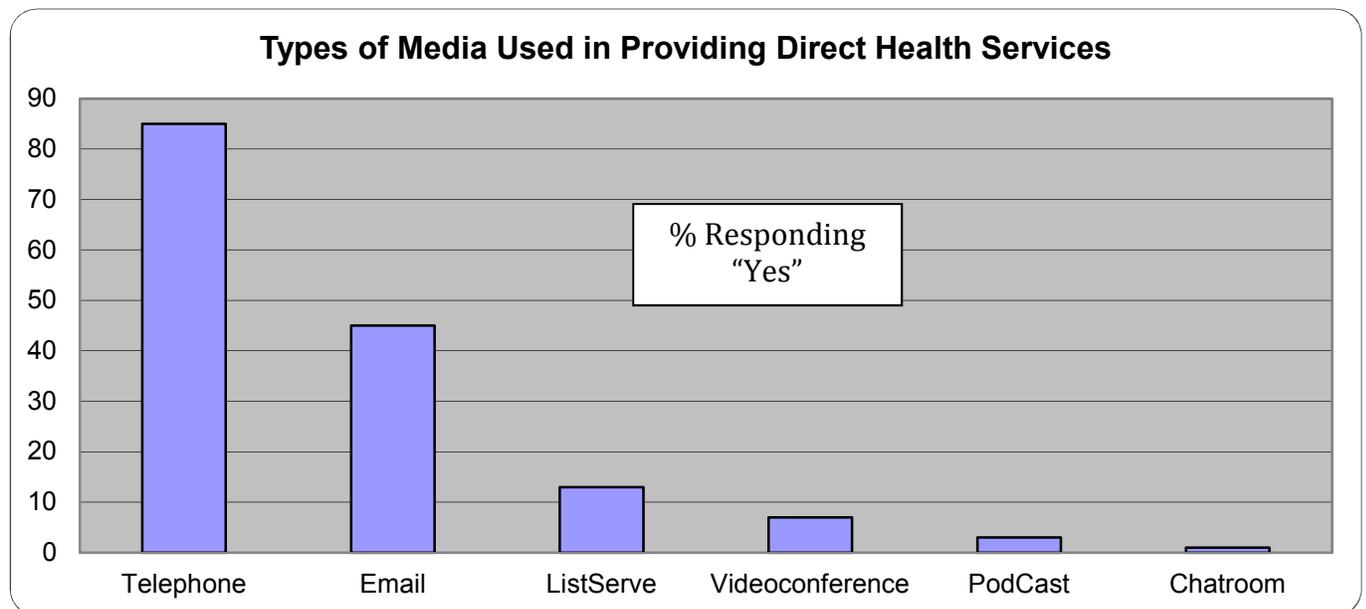
Workforce Issues of Psychology Health Service Providers

Most of this chapter has focused on psychiatry which, as part of the medical profession, has several sources for data pertaining to workforce issues. It is not clear whether these issues also pertain to mental health professionals in general. Some comparable data are available for psychologist providers and suggest that the issues described above apply to the broader mental health workforce.

The U.S. Department of Labor estimates that in 2011 there were approximately 100,850 clinical, counseling, and school psychologists (17). Comparable to the trend in psychiatry, a 2009 American Psychological Association report reveals that 48% of its members were aged 55 and older (18). A survey of health service providers conducted by the American Psychological Association (APA) reported a mean age of 52 (18). Though the response rate for this survey was low, it should be noted that it was not restricted to APA members. Therefore, the “aging out” phenomenon in psychiatry will also occur in psychology.

Fortunately, this 2008 APA survey included questions about telepsychology (18). Using a broad definition of telepsychology which included phone contact, the survey asked providers to report whether and how they used communication technology in their clinical practice. The respondents were prompted to respond “yes” only if they used the technology for actual communications about therapeutic issues which included appointment scheduling. Of 1,226 survey respondents, 87.3% reported using telepsychology to deliver health services. As shown in Figure 10, the predominant media used was the telephone, with 85% reporting use. In total, 45.4% used email. Far smaller percentages used listserves (12.6%), internet videoconference (6.7%), non-internet videoconference (6.3%), podcast (2.8%), and internet chat room (2.3%).

Figure 10. Survey of Psychologists Regarding their Use of Electronic Media in Patient Care.



Therefore, the predominant use of communication technology was the phone, with far fewer using videoconferencing. The most common types of services provided were appointment scheduling (71.8%), communication between sessions (64.7%), providing

resources (63.2%) and referrals (62.4%). Actual provision of psychotherapy (33.5%) or counseling (20.6%) were far less frequently endorsed.

More recent American Psychological Association Center for Workforce Studies data also indicates disparities in availability of psychological services related to urban/rural status(19). A 2011 report based on data collected in 2008 estimates that approximately 85% of licensed psychologists are located in designated metropolitan areas whereas 60% of the U.S. population lives in metropolitan areas.

Data from Iowa regarding its licensed psychologist workforce confirms this finding (4). Iowa has 19.1 licensed psychologists per 100,000 population which gives it a rank of 46th nationwide on this metric. It is far lower than neighboring states such as Minnesota (59.8/100,000) or Missouri (27.5/100,000). However, it is not lower than South Dakota (14.6/100,000) which is Iowa's neighbor in national ranking, 47th. Amongst Iowa's psychiatrists, advanced registered nurse practitioners, social workers, and marital and family therapists, psychology has the highest percentage of practitioners aged 55 and older at 47%.

Efforts to relieve this shortage have focused on attracting and retaining providers in the state through support of psychology doctoral training programs and establishment of attractive internship opportunities. TMH solutions are currently being explored to address this shortage and the primary insurer for Medicaid, Magellan Behavioral Health, currently supports TMH throughout the state.

Conclusions: The Optimal Use of Telemental Health to Address Workforce Shortages

Remedying the workforce shortages in mental health care will require multiple new approaches. TMH is one approach to overcome the geographic disparity in the distribution of mental health providers, but TMH is not a stand-alone solution. It should be incorporated into evolving models of multidisciplinary collaboration.

Collaborative care models in which mental health specialists provide consultation and guidance to other professionals, or even to lay providers, is one of the most well documented means of multiplying workforce capacity (20, 21). These models could be readily adapted to TMH. In one of the most interesting demonstrations of this process, Hilty and colleagues (22) demonstrated that consultation through TMH to rural primary care providers was associated with an increase over time in accuracy of diagnosis and medication dosing. Medication dosing adequacy, as defined by national guidelines, increased from 47.4% to 63.6% ($p=0.001$) over a period of 6 years. Rural primary care providers' perceptions of being able to treat more patients for psychiatric problems also increased over time. Though many TMH consultants have noted such change over time in the knowledge base developed by their consultees, this is one of the first studies to document such success. Perhaps making such skill acquisition an explicit goal of TMH consultation, in addition to improved patient outcomes, would accelerate and increase the degree to which rural primary care providers can independently treat mental health problems.

Another way TMH can expand the mental health workforce is through online interventions that require minimal or no therapist contact (23). This research is reviewed in the chapter on research in this book. The research supporting online cognitive behavioral therapy indicates moderate effect sizes on average. Attrition from treatment remains a major issue but one that can be addressed in future research. Perhaps a combination of online therapy sites with a tethered social networking site will provide the needed interpersonal benefits of psychotherapy without using professional resources.

In short, TMH can improve access and increase efficiency in the distribution of mental health resources. However, the field must “think outside the box” to harness communication technology in ways that meaningfully expand and/or reallocate mental health resources in light of the inevitable growing need.

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