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Mental Healthcare in Rural and Underserved Primary Care Settings: Benefits of Telemental Health, Integrated Care, Stepped Care and Interdisciplinary Team Models

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Abstract

Contemporary healthcare has a patient-centered approach, integrates health/mental health care, emphasizes interdisciplinary teamwork, and adopts innovations such as communications technology. Telemedicine (including telepsychiatry) adds versatility to service delivery by improving access to care, leveraging expertise of key disciplines to the point-of-service, and tele-education. Key disciplines in integrated care, wherein psychiatric and other mental health services are provided in a primary care platform, are the psychiatrist, other mental health professionals (i.e., psychologists, social workers, marriage and family therapists), mid-level professionals, and nurses. These clinicians provide clinical, administrative, and care coordination expertise oversight. Overall, telemedicine, cross-training, stepped care roles, and use of clinically "versatile" clinicians help to fill "holes" in services for patients. Evidence-based treatment becomes more accessible, better disseminated, and in "real-time" with use of technology.

Introduction

Healthcare is being confronted with questions on how to deliver quality, affordable, and timely patient-centered care in a variety of settings – particularly mental health (MH) care – and with increased clinical operating efficiency [1,2]. One strategy is to use an integrated care service delivery model. This is done typically by integrating clinical, administration, and funding clinical objectives – and by employing a multidisciplinary or interdisciplinary team. Another strategy is getting the appropriate clinician expertise, along with other disease management interventions, to the point-of-service. At best, the highly trained professional works "at the top of his/her license." Finally, telehealth is more commonly deployed to fill "holes" in needed expertise by using telemedicine/telepsychiatry for clinical care, education, and other interventions [3]

The integrated care service delivery approach is popular presently to address medical and MH disorders/illnesses in the primary care setting (e.g., schizophrenia, bipolar disorder, recurrent major depression). These disorders have higher mortality primarily due to socioeconomic factors, poor access to effective primary/preventative care, and the burden of chronic health conditions [4]. An integrate care model – or one at least partially designed in that fashion – and a stepped care model emphasize team work, collaboration, and efficiency. They try to match the patient's need with a team member who can provide it, yet prefer the highly trained professional working at the top of his/her license (e.g., Why have a psychiatrist do a function if a care coordinator can do it, more handily, or better?) Nonetheless, most teams are incomplete or have times when members are absent, so it is helpful to have team members who can "wear more than one hat."

Mid-level clinicians, non-psychiatric MH providers, advanced practice nurses (APNs), and other nurses offer such versatility. They complete less clinical training and have a more restricted scope of practice than physicians, but they have expertise and experience in several key clinical areas [5]. APNs (e.g., nurse practitioners, certified mid-wives, clinical nurse specialists), registered nurses (RNs), licensed vocational nurses (LVNs), and those with other degrees may be overlooked for their expertise [6]. The affordable care act (ACA) has been instrumental in advancing the utilization of nurse managed clinics [6] – and these show the many clinical (education, procedures, group interventions), administrative (business, quality improvement) and supervisory skills (care coordinators, case management) for the underserved [7].

MH service delivery in primary care has a continuum of providers: the care coordinator-medical assistant-social worker-nurse-primary care provider-MH clinician-telepsychiatrist. MH clinicians include psychologists, social workers, marriage and family therapists, and others who contribute to services in this setting. Optimally, in MH service delivery, non-MD MH professionals see less complex cases, leaving the psychiatrist to manage more complicated cases, provide clinical oversight, and review cases in team formats [8]. Overall, this ensures that a range of effective, non-pharmacologic health psychology-based treatments are employed [9].

Telehealth, telemental health (TMH), and tele-education assist healthcare professionals in underserved areas by providing timely access to specialty care in communities which lack specialty expertise locally [10-11]. Telepsychiatry is in its sixth decade and has increased access to care in urban, suburban and rural settings – with satisfaction very high for a wide variety of services [3]. A review found it to be effective for assessment, diagnosis, and treatment across many

populations (e.g., adult, child, geriatric and ethnic), with participant experience apparently comparable to in-person care for participants (e.g., patient-doctor communication; cognitive behavioral therapy) [3]. It has been used with a variety of models of care (i.e., collaborative care, asynchronous, mobile, telemonitoring) and with an interdisciplinary team with equally positive outcomes [3,12]. Applying the technology to promote/distribute patient-centered care by nurses, nurse practitioners (NPs), and other primary care providers (PCPs) for MH services empowers many team members [13].

This paper will: 1) Highlight the key ingredients of integrated care and specifically health and psychiatric/mental health care, 2) Use a case example to spell out a typical rural MH presentation, how a team without a full range of professionals would respond, and how telemedicine fills an important need for care options, 3) Provide an overview of telepsychiatry's effectiveness in service delivery to primary care, and 4) Highlight the versatility of TMH, stepped care and tele-education by nurses in filling "holes" in clinical services.

Integrated Care: Core Components Including Teamwork and the Clinical Roles of Nurses

Integrated inpatient medicine and psychiatry treatment programs are specifically designed to address the needs of patients with medical and MH comorbidity [14,15]. These patients have been categorized into four groups: I) low behavioral and physical health needs; II) high behavioral health and low physical health needs; III) low behavioral health and high physical health needs; and IV) high behavioral health and high physical health needs [16]. Comorbid MH/medical disorders/illnesses significantly impact primary care. For instance, a 17-year follow-up study of over 80,000 people in the United States, those with mental illness died an average of 8.2 years earlier than those without it, with excess mortality primarily due to socioeconomic factors, poor access to effective primary/preventative care, and the burden of chronic health conditions [4].

Integrated care provides an approach to mental illness in a general medical setting, and though not quite as well known, providing general medical care in a MH clinical setting (i.e., "reverse integration"). The core characteristic of integrated care is responsibility, decision-making, and oversight of patient care; this is true along the entire interdisciplinary team from physicians to care coordinators. A second characteristic is co-location of services, both literally and/or virtually – that applies to both inpatient and outpatient sector care. Characteristics three to five are integrated funding, evaluation, and outcome measurement. We contend that two additional characteristics are needed: sixth, an e-platform, and seventh, reimbursement. Reimbursement is variable in the U.S. as it may align (e.g., a capitated or sole 'Medicare' population) or not align (i.e., mixed populations) with one payer.

Administrators of services that employ a fully or partially integrated care model have to assess how staff can function in a versatile manner. So, if employees of a clinic range from coordinators to specialists, we ask, "Who can wear more than one hat?" or, "Which discipline can do all/most of all the care or knows the basics of the whole range?" Nurses have tangible clinical (e.g., direct care and delegated care from physicians), business (i.e., management), and health system administration (e.g., quality improvement, team work) skills – and the intangible skills related to "how to" or "know-how." They therefore play a role in optimizing traditional approaches that tend to fall short of full integration of care – that is, they fill "holes" in the services.

Many interventions have been tried for MH service delivery in primary care. Traditionally, psychiatric consultation has included second opinions and provide "liaison" services like education and team-building; these appear better for most compared to sequential referral etiquette (i.e., refer patient to an outpatient psychiatrist elsewhere from a primary care setting). MH NPs may also function in a liaison role to the primary care providers, using protocol-based care models using RNs as psych care managers [15]. The evidence-base is also growing on nursing interventions in-person or like coaching via telehealth, [17] which improve behavioral change in diabetes, one of the most common illnesses in primary care. Little has been written on how to use tele-education of nurses and other medical and MH providers [3].

Case Example

Rural TMH Consultation: Culture, Access to Specialized Care and Paediatric Nurse Roles

ID Info: A 12 year-old Latino-American boy was struggling in school, socially, and at home. Parents attributed this to "ADD." He had a 9 year-old sister, a 7 year-old brother and a 3 year-old brother. They lived in small rural community of 4,000 with a small K-12 school, one private and one public health clinic juxtaposed, and one adult MH therapist (masters in social work, adult patient care).

HPI and Referral: The boy was born in Mexico and his father and mother immigrated 10 and 6 years earlier, respectively. A public health nurse with 25 years of experience supported the physician ordering the consultation as the PCP/pediatrician was not sure how to proceed, "It seems like attention deficit hyperactivity disorder (ADHD), but I am not sure" according to the brief consultation request faxed to the academic center 100 miles away. The concerning symptoms had been focused in these two areas: 1) inattention, poor follow-up on homework, trouble focusing thoughts, forgetfulness, and interrupting others at home more than in class; and 2) being seen as "hyperactive," disruptive," impulsive, and irritable at home and in class.

Consultation and Technology: The nurse had helped with implementation of a telemedicine service in many regards: identified potential psychiatric referrals, discussed referrals with the physician, handled logistics (scheduling, paper work), and set up the equipment. The telemedicine unit with transmission speeds at 384 kilobits per second (KBPS) and far-end camera control was in place for the provider from an academic health center. Paying for patients' visits was only through Medicaid/Medicare and often with a small contract to the health system (federal program payment it did not cover the full cost for services).

Evaluation: A 90-minute telepsychiatric consultation was completed by a general telepsychiatrist; child psychiatrists were not available. The interview was in stages: the child, mother and two older sibs; the child; the mother; and all parties. Disruptive behavior appeared to correlate with child-father issues (discipline, absence of the father for truck-driving work) and possible inattention and hyperactivity at home/school; the latter led to problems with peers.

Treatment Plan:

1. Continue evaluation for ADHD: Conner's scales by parents and teacher; done 3 weeks later, the scores were at 76 (parent version; borderline diagnostic threshold) and 56 (teacher version; below threshold). This was consistent with the clinician impression that

ADHD was not the primary problem, which seemed localized to home.

2. Short-term therapy (e.g., 6 sessions over 12 weeks when father was in town): The goals were to engage father, work on co-discipline by mother and father on key issues, and create "special time" with father-child when possible. The patient's mother and teacher were asked to complete a questionnaire for ADHD for a follow-up visit in 2 months.
3. Culture and language integration: A telemedicine-based psychotherapy was with a Spanish-speaking social worker from the academic center who worked with children and adults, rather than an adult provider in the community who spoke little Spanish. This allows the patient to speak in the primary language, which increases rapport, use key terms with meaning in Spanish, and a full range of expression on sentimental themes [18-20].

Follow-up: An immediate medication prescription may have been misfired on cases like this by a PCP. At 2-month follow-up, the patient's behavior at home was better, but not at school and in social settings (e.g., church, stores). A medication for the inattention of ADD was needed, but the "hyperactivity" had subsided.

The role of technology: Technology played three key roles in this process: 1) use of interpreter for assessment; 2) connecting a MH therapist to a rural site; and 3) accessing a specific service provider, in this case based on age (i.e., child therapist) and language for implementation of care. Availability and providing something better than usual care improves services and integrates care. Additional options could include web-based data management, physician-to-provider phone or e-mail curbside consultation and asynchronous telepsychiatry (ATP; also known as store-and-forward telepsychiatry) [3,21].

Role of nursing: The nurse described played a number of key roles in the case: 1) telemedicine coordinator, which requires facility, outreach communication to another strategic partner, and transmission of clinical data; and 2) juggling of an additional role and supervision of others, which is easier for a more highly trained staff.

An Overview of the Effectiveness of Telemental Health in Primary Care

More information is available over the last decade to compare TMH services with in-person care. Telemedicine simulates real-time experiences in terms of audio and video quality at 384+ KBPS. The building of rapport relies on detection of non-verbal cues and openly paced conversation. In addition to comparison (or "as good as") studies, studies show that telepsychiatric outcomes are not inferior to in-person care (i.e., non-inferiority studies) [22]. Reports include less length of hospitalization [23,24] more medication adherence [23,25] reduced symptoms of disorders, [23-26] and therapy judged as evidence-based for PTSD [27,28].

Child telepsychiatry research is now beyond feasibility, acceptability, and sustainability to special populations (e.g., autism-spectrum patients) [4] and initial qualitative analysis of young people's perspectives [29]. Indeed, ADHD has been treated in-person [30,31] and by randomized trials of synchronous and asynchronous collaborative care, partly using randomized trials and web-based data systems [32]. Studies show that diagnosis is reliable for all ages, [33] adult patients' depression improves with CBT, [34] and child and adolescent primary care patients improve in terms of depression and behavior (measured on subscales of behavioral checklists) [35,36].

In terms of geriatric services, the benefits of telepsychiatry are emerging from neuropsychiatric studies (above) and a few clinical studies. Nursing home studies have been effective in terms of informal measures, [37] mainly focusing on depression or dementia, with better access to formal evaluations by psychiatric consultants and more efficient use of their time; some would have gotten no service otherwise. Assessment and cognitive intervention outcomes were similar for telepsychiatry and in-person services [38]. Telemedicine to a rural gero-psychiatric inpatient unit yielded positive results in terms of perception/satisfaction to onsite psychiatric care [39].

One area of study related to telemedicine, and particularly telepsychiatry, has been culturally diverse populations and implications for care. Rural sites face many challenges in terms of specific needs of Hispanics/Latinos and Asians, Native American, Eastern European and other populations (e.g., sign language) [4]. Language is a key factor and a common practice is to use 'interpreters' on-site. It is known that use of relatives or untrained interpreters miscommunicate medical complaints [18] or de-emphasize information, [19] leading to calls for credentialing [40]. One remedy is adding interpreters by telephone from an academic center or private interpreter service; this is not the same as in-person service [18,19].

Telemental Health, Stepped Care and Nurse Tele-Education Help to Fill "Holes" in Clinical Services

TMH models of clinical care and education have pros and cons, [3,41-42] including their level of overall intensity, cost, feasibility and depth of the relationship between the TMH provider, the PCP and patient. Low intensity models include tele-education, formal case review and in-person, telephone or email doctor-to-doctor "curbside" consultations. A multi-specialty phone and e-mail physician-to-provider consultation system for adults and children with developmental disabilities used a 24-hour warm-line, mean 38-minute discussion, and 1- to 2-page summary for follow-up documentation [43]. Moderate intensity models include an integrated program of MH screening, therapy on site, and telepsychiatric consultation (phone, email or video), with continuing medical education (CME) and training on screening questionnaires [35-36] or asynchronous telepsychiatry (ATP) to primary care in English and Spanish-speaking patients in primary care [12,34,44,45] High intensity models are typically the ones previously mentioned involving collaborative care [21-22,25,30]. Effective and cost-effective models employ adequate intervention resources at the right time (e.g., care coordination) [46-48].

In a stepped care model, all eligible patients start with an evidence-based treatment of low intensity as a first step, [49-51] with progress monitored so that patients who do not respond adequately can 'step up' to a subsequent treatment of higher intensity [52]. This model is suitable in (primary) MH care because treatments range from less intensive interventions - psychoeducation self help interventions (individual or group courses), problem solving treatment (PST), to more intensive treatments - cognitive behavioral therapy and pharmacotherapy [46,47,51]. Other key components are teaching patients to self-correct, use of a care manager (monitors follow-up plans, interventions based on risk-stratification, and patient tracking) and integrated collaboration between the PCP and specialized MH care [52]. Stepped care model provision of timely, adequate, quality

care appears to be a logical approach from both clinical and economic perspectives in several countries [53]. England and New Zealand have implemented guidelines for stepped care model for depression and anxiety. The first trial on 170 older adults recruited in primary care found the program halved the incidence of depression and anxiety disorders from in 12 months, [54] demonstrated cost-effectiveness, [55] and maintained outcomes at 24 months [56].

Telehealth has increased both education of, and service delivery by, rural nurses. Rural nurses and doctors typically have little opportunity to further their education and training. A review of effectiveness of videoconference-based tele-education for medical and nursing education showed high satisfaction with videoconferencing education; it was perceived as equivalent as or better than in-person education for knowledge acquisition and integration [57]. Clinically, the evidence-base is growing on nursing interventions like coaching via telehealth [17]. Traditional use of technology for nursing education focuses on clinical procedural assistance to PCPs or such completion by the nurse. Tele-education is emerging as a target area for skill development for nurses – both using it and being a leader in implementation [58]. Technology has used simulated patients at a distance to teach general nursing skills, how to work as part of a team, how to gain experience in work settings previously unfamiliar to them, and how to get on the same page across disciplines (i.e., how to develop shared mental models) for the care of a patient.

Discussion

Contemporary healthcare is patient-centered, integrates health and behavioral health services, uses stepped care with interdisciplinary collaboration, is effective fiscally, and capitalizes on other innovations – including technology. Versatility in leadership, roles, and models of care have always been "needed," particularly in underserved populations to provide basic care, but now, these concepts are valued to aim for "best care practices." Physicians and nurses are team members that may play a key part in such a versatile approach.

Medical and nursing education continues to evolve in terms of skills, competencies, attitude and other foci in addition to knowledge [59]. Aside from the "core" nursing training, there may be a need for additional training in technology, teamwork, healthcare systems and changing roles/"hats" depending on what is "needed." Technology is already a target area for skill development – both using and being a leader in implementation [58]. The potential for misunderstanding among large teams is tremendous unless individuals can share their understanding and create a shared mental model of expectation, roles, and outcomes, [60]. particularly with good physician leadership on complex cases [61]. Shared mental models will also enhance team performance by their organizing knowledge structures, concepts and associations around education, [62] as learners actively reflect and receive feedback [63]. Faculty development programs integrate this work further into a system [64].

Conclusions

Contemporary healthcare is patient-centered, integrates services health and behavioral health, uses stepped care with interdisciplinary collaboration, is efficient and effective fiscally and capitalizes on other innovations – including technology. Providers with clinical, administrative, technology and supervisory expertise are versatile and facilitate the overall fitness of an organization to provide quality care and adapt in a changing environment, and thus providing the context to apply the best science. Telemedicine facilitates integrated medical and psychiatry care and multidisciplinary care in the primary care setting.

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