

SCIENTIFIC INVESTIGATIONS

Perspectives on primary care management of obstructive sleep apnea: a qualitative study of patients and health care providers

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Study Objectives: Difficulties in providing timely access to care have prompted interest in primary care delivery models for obstructive sleep apnea (OSA). Sustainable implementation of such models requires codesign with input from key stakeholders. The purpose of this study was to identify patient and provider perspectives on barriers and facilitators to optimal, patient-centered management of OSA in a primary care setting.

Methods: This study was conducted in Alberta, Canada. Data from key stakeholders were collected through an online survey of primary care providers (n = 119), focus groups and interviews with patients living with OSA (n = 28), and workshops with primary care and sleep providers (n = 36). Quantitative survey data were reported using descriptive statistics, and qualitative data were analyzed using an inductive thematic approach.

Results: Several barriers were identified, including poor specialist access, variable primary care providers knowledge of OSA, and lack of clarity about provider roles for OSA management. Barriers contributed to patients being poorly informed about OSA, leading them to separate OSA from their overall health and eroding trust in the system. Suggestions for improvement included integration of care providers in a comprehensive model of care, facilitated by improved system navigation and more effective use of technology. Themes were consistent across data collection methods and between stakeholder groups.

Conclusions: Although primary care delivery models may improve access to OSA management, stakeholders identified important challenges in the current system. Innovative models of care, developed with input from patients and providers, may mitigate barriers and support optimal primary care management of OSA.

Keywords: obstructive sleep apnea; health care delivery; ambulatory care; primary health care; stakeholder participation

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BRIEF SUMMARY

Current Knowledge/Study Rationale: There is growing interest in developing primary care delivery models for obstructive sleep apnea (OSA) because of the difficulty in ensuring timely access to care for patients with OSA. Primary care management of OSA could significantly improve access and reduce wait times; however, it is important to identify barriers and facilitators to such a model and to understand the perspectives, needs, and concerns of patients and providers.

Study Impact: Primary care delivery for OSA is desirable and attractive to stakeholders. However, such a model would need to overcome significant barriers and improve integration of care providers. Close engagement and input from patients and providers are essential to designing innovative primary care models that effectively mitigate barriers to optimal OSA care.

INTRODUCTION

Obstructive sleep apnea (OSA) is common, with an estimated population prevalence ranging from 3% to 50% depending on age and sex.^{1,2} Untreated OSA is associated with increased cardiometabolic risk, poorer quality of life, more frequent motor vehicle collisions, and greater, more costly use of the health care system compared with the general population.^{3–8} Treatment of OSA improves clinical outcomes and is cost effective.^{9–15}

Challenges in providing timely access to sleep specialists have been reported in several countries.^{16–19} The resulting delays for care have led to a demand for alternative care delivery models,^{20–25} such as the management of OSA in a primary care

setting. Several recent studies have demonstrated that primary care physicians can effectively manage OSA^{21,26–28}; however, many physicians rate their knowledge of sleep disorders as poor, lack confidence in managing OSA, and have objective knowledge gaps.^{29–33} Furthermore, time constraints in primary care may hinder the effective management of OSA.^{33,34}

Although many patients prefer to receive health care within their medical home,^{35–39} implementing a sustainable model of OSA management in primary care requires in-depth codesign that incorporates input from key stakeholders on their experience with current care delivery models and suggestions for improvement. The purpose of this study was to identify barriers and facilitators to optimal patient-centered OSA care, from the

perspective of primary care providers (PCPs), sleep specialists, and patients.

METHODS

Study design

This study was conducted in the province of Alberta, Canada. Data were collected through an online survey of PCPs (physician and nonphysician members of the primary care team), focus groups with patients living with OSA, and workshops with PCPs and sleep specialists. Ethics approval for this study was obtained from the University of Calgary Conjoint Health Research Ethics Board (Ethics ID: REB16-0635). Additional details on the study setting and methods are provided in the supplemental material.

Study setting

In Alberta, patients presenting to a primary care physician with suspected OSA may be referred to a specialist or undergo home sleep apnea testing through community-based respiratory homecare companies or sleep laboratories. After the diagnostic test, the physician may choose to manage the patient or refer to a sleep specialist or pulmonary physician. Specialists may order overnight polysomnography in a sleep laboratory if clinically appropriate. In Alberta, both home sleep apnea testing and polysomnography are provided through a mix of public and private testing facilities.

In Alberta, OSA is commonly treated with continuous positive airway pressure therapy (CPAP), which is available by prescription and provided by respiratory homecare companies staffed by respiratory therapists. Dental appliances and upper airway surgery may also be provided by dentists or otolaryngologists. The costs of CPAP or dental appliance are borne by the patient, either out-of-pocket or through private insurance; government funding for CPAP is available for patients in low-income groups. This complicated care and funding landscape provides the context within which stakeholders form their perspectives.

Study procedure

The study proceeded in 3 phases: a primary care survey, focus groups or interviews with patients, and provider workshops. Each phase built on the previous phase. The use of multiple data collection methods and both qualitative and quantitative data enabled triangulation of data sources to ensure accurate representation of perspectives from a diverse set of stakeholders in a complex system.

Primary care survey

The online survey was developed by a provincial Sleep Disorders Working Group (SDWG) comprising primary care and specialty clinicians and health system leaders that advise on clinical policy for sleep care in Alberta. A subteam of SDWG members drafted the survey and remaining members of the working group pilot tested it before distribution. The survey included questions about access to sleep testing facilities or clinics; self-efficacy in managing OSA; factors influencing the decision to refer for testing or treatment; and perceived barriers

to optimal OSA care (supplemental material). The survey was created in the Select Survey online platform (G2, Chicago, IL).

PCPs were invited to complete the online survey between June 8 and July 30, 2016. The survey was distributed electronically via online newsletters, email lists, or member websites for several primary care medical societies and governing bodies in Alberta (supplemental material). The survey link was also disseminated through social media (Twitter), and hard copies of an invitation letter containing the survey link were delivered to primary care practices by respiratory homecare companies and by mail. Finally, several sleep physician members of the SDWG promoted the survey during continuing education events with PCPs. Through these distribution methods, it was estimated that most of the more than 3800 physician and 1400 nonphysician PCPs would have received the survey link. Participation was voluntary and anonymous unless respondents wished to be contacted for workshops.

Patient focus groups/interviews

Facilitator-led focus groups were held with 2 groups of 6 Albertans with OSA in March 2017. The focus group guide was developed by the research team in collaboration with the SDWG and built on themes identified from the survey. Focus groups explored patient perspectives on accessing OSA care through their PCP or sleep specialist and the quality of OSA care.

Patients at any stage of diagnosis or treatment of OSA were invited to participate. Recruitment advertisements were distributed through social media (Twitter) and through posters in respiratory and sleep clinics and at respiratory homecare company offices around Alberta. A link to the invitation letter was also posted on the website for Alberta Health Services' Respiratory Health Strategic Clinical Network, which is the umbrella organization for the SDWG. Patients were provided with contact information for the study team if they wished to participate. Focus groups were held in rural and urban communities in Alberta based on the geographic distribution of participants. Travel expenses were reimbursed, and patients were provided with a gift card for participating. Patients who were unable to attend focus groups were interviewed by telephone.

Provider workshops

Workshop participants included PCPs, sleep specialist physicians, and other providers working with OSA patients, recruited using similar methods as for the survey. Participants attended a workshop in Calgary (for Southern Alberta) or Edmonton (for Northern Alberta), respectively, held in May and June 2017. Workshops included guided discussion about facilitators and barriers to optimal OSA care in Alberta, followed by presentation of preliminary results from the survey and focus groups. Finally, workshop participants were divided into small groups to discuss selected issues that arose in the large group discussion, including possible ways to mitigate barriers identified in the surveys and focus groups.

Data analysis

Quantitative survey data were summarized using descriptive statistics. All focus groups, interviews, and workshops were recorded and transcribed verbatim. At each phase, qualitative

Table 1—Participant characteristics.

Characteristic	Survey (n = 119)	Focus Groups (n = 28)	Workshops (n = 36)
Provider, n (%)			
Primary care physician	56 (47)	—	8 (22)
Sleep physician	—	—	8 (22)
Nurse/nurse practitioner	31 (26)	—	5 (14)
Respiratory therapist	19 (16)	—	14 (38)
Polysomnography technologist	—	—	1 (3)
Other	13 (11)*	—	—
Female sex, n (%)	—	12 (43)	22 (61)
Rural practice setting, n (%)	50 (42)	12 (43)	10 (28)
Practice type, n (%)			
Public	—	—	30 (83)
Private	—	—	3 (8)
Mixed public/private	—	—	3 (8)

*Category includes 1 kinesiologist, 1 exercise specialist, 1 chronic disease management manager, 4 referral coordinators, and 6 unspecified. Dashes = not applicable.

data collection was informed by the results of preliminary analysis from prior phases. At the end of all 3 phases, 2 separate investigators (KGB and JEK) used an inductive thematic approach to code the qualitative data and identify themes and subthemes, first independently and subsequently through regular meetings to compare and refine codes. Through discussion and continual reference to the data, the investigators iteratively developed a consensus regarding study themes. All transcript data was stored and coded using NVivo (version 12; QSR International, Burlington, MA).

RESULTS

Characteristics of study participants are provided in **Table 1**. Survey responses were received from 121 health care providers who identified as PCPs, of which 2 responses from outside Alberta were excluded. Some of these providers were allied health members of the primary care team rather than the most responsible provider; given their integral role in the delivery of OSA care, their perspectives were included in the study. Twenty-eight individuals with OSA participated in patient focus groups (n = 12) or interviews (n = 16), and 36 health care providers participated across the 2 workshops.

Survey results

PCPs reported moderate confidence in their knowledge about the diagnosis and management of OSA, although results were highly variable (**Figure 1**). Furthermore, although physicians understood their role in diagnosing OSA, they lacked confidence in their role with respect to treatment. Respiratory therapists reported greater knowledge about OSA compared with physicians, and nurses reported poorer knowledge; both of these nonphysician providers lacked clarity about their role in OSA management. Overall, PCPs reported referring 43% (standard deviation, 42%) of patients with OSA to sleep

specialist physicians for ongoing management. Additional survey results are provided in the supplemental material.

Themes

Themes identified from survey, focus group, interview, and workshop data fell into 3 broad areas: (1) barriers and facilitators to optimal OSA care delivery; (2) adverse impacts of the current model on patients; and (3) potential solutions to improve care delivery (**Table 2**, **Table 3**, and **Table 4**).

Area 1: delivery of OSA care

Access to OSA care: Of major concern for patients and PCPs were challenges with providing timely sleep specialist access for patients with suspected OSA. Delays in care were unacceptable to patients, in light of health concerns related to untreated OSA:

“Unbelievable that we should have a problem that can be so severe...that someone has to wait a year, up to a year to two years even to get the test, that’s crazy” (Patient)

“[W]e can have a complex patient...need to get in to see the respirologist or a sleep physician and that’s taking so much time that the patient gets frustrated” (PCP)

Issues with access were magnified in rural communities, where specialty OSA care was less readily available. The implications for patients in these regions related to both the quality of clinical care and patient-borne costs:

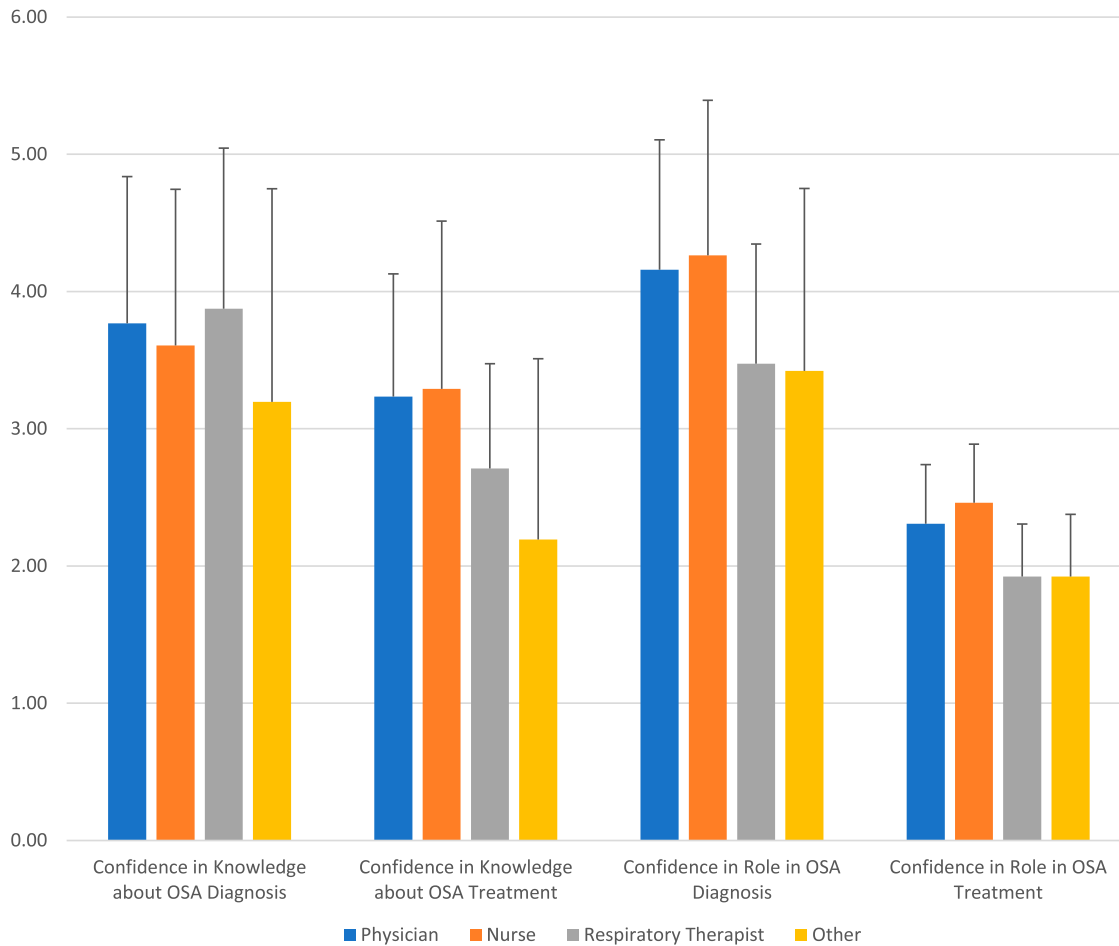
“[Y]ou drive there 500 kilometers, you be in there for 15 minutes and then you either drive back or stay overnight, so there’s a lot of cost in that, accessing some of the services” (Patient)

Both patients and PCPs saw value in community-based care by respiratory homecare companies, both in mitigating delays and improving access to quality care:

“I saw the doctor one day...picked up the machine...the next week I got my machine, so it was pretty quick” (Patient)

“We do have a respiratory therapist that you can see in the facilities...very good about seeing clients with questions” (PCP)

Figure 1—Provider confidence in management of obstructive sleep apnea.



Results represent mean (standard deviation) of responses from primary care survey, based on a Likert scale from 1 (lowest) to 5 (highest). OSA = obstructive sleep apnea.

Overall, stakeholders viewed the community-based homecare providers as filling an important gap resulting from long wait times for sleep specialist physician care of OSA.

Variable provider knowledge about OSA: Awareness about OSA was noted to have increased over time. Although PCPs reported a moderate level of knowledge in the survey, many reported gaps in knowledge about OSA care, leading to poor confidence in OSA management. Deficiencies in knowledge spanned the care continuum from selection of diagnostic tests to initiation of treatment to follow-up:

“[T]aking history, finding out the pre-test probabilities of sleep apnea, what will I do, so I send them somewhere to go have a test, the results come back, all I have to do is sign a prescription...we need to find a way of bringing it to, you know, primary care physicians” (PCP)

Patients accepted this variability in knowledge as long as a sleep specialist physician or respiratory homecare company was involved in their care:

“I think he’s an excellent doctor but he’s not a specialist on this, so he’s a little bit reluctant to say more than what the [homecare company] has said” (Patient)

Despite gaps in knowledge that were a source of consternation among PCPs, patients continued to value the trusted relationship with their physician.

Unclear provider roles: Citing competing demands in clinical practice, PCPs expressed challenges in overseeing the diagnosis and especially treatment of OSA. Although community-based homecare companies were readily available, there was still confusion about how to navigate the system:

“[A]s primary care providers you’re left saying ‘Who exactly?’ and what are all the different options for that model of care [private] versus the over-riding model of care” (PCP)

Furthermore, even after patients received a diagnosis of OSA, patients and PCPs noted that homecare companies focused on PAP therapy, and there was a lack of clarity about responsibilities for ongoing care:

“[M]y sense is that some of the private clinics are mostly interested in providing CPAP machines and not very interested in other treatments” (PCP)

A key contributor to these challenges with system navigation and role clarity was poor communication between providers. It was difficult for PCPs to access the results of sleep diagnostic

Table 2—Stakeholder perspectives on delivery of OSA care.

Theme	Subtheme	Representative Quotes
Access to OSA care	Specialist wait times are unacceptable	"[I]f that's a requirement to see a specialist before you actually get treatment...at least for some of us it is, you know specialist wait times are ridiculous" (Patient)
	Rural patients experience poorer access to quality care	"I feel being in a smaller community our patients often are overlooked and follow-up on the importance of their treatment is not done" (PCP)
	Respiratory homecare companies improve timely access	"The [homecare providers] do a good job of taking over all aspects of OSA management when the diagnosis is made" (PCP)
Provider knowledge	PCPs report variable knowledge, leading to poor confidence in OSA management	"I am still not sure who needs a level 3 study; what the levels of study are, and which level you need done for what level of intervention." (PCP) "Diagnosing OSA is easy. Treating it is the issue." (PCP)
	Patients accept PCP's knowledge deficiencies when experts are available	"[T]he clinicians that I see know that equipment, and they know how to read all of the information, the chip in the machine, and they know how to adjust it, so I don't know if a family physician would have that, I would suspect you would need to have some other person at the clinic...more specialized than what a family physician has to think about" (Patient)
	Patients value a trusting relationship with their PCP	"[H]e understands who we are, and I deal with him so much on my medications and stuff...when it was brought up by my wife and daughter, that 'we think that's the issue', he was very responsible, and he is actually a very good family physician" (Patient)
Provider roles	Demanding practice hinders effective OSA care by PCPs	"In a family practice, we do not have the scope or time...our job [is] to screen and refer" (PCP)
	Despite availability of respiratory homecare companies, navigation challenges persist	"[T]o me this whole area is like a big black hole, and there's things that go on in there and I have no idea how they're connected, what my end point is, it's just frustrating" (PCP)
	Unclear who should initiate non-PAP therapies or provide ongoing follow-up	"I think long term follow-up is something that probably needs to be handled a little bit better...I'm probably 12 or 13 years into having been diagnosed originally, and I haven't had any follow-up on my sleep apnea at all really, in say seven or eight years" (Patient)

OSA = obstructive sleep apnea, PAP = positive airway pressure, PCP = primary care provider.

testing or to contact sleep specialists with questions related to the management of their patients with OSA. These were important barriers to effective OSA care.

Area 2: adverse impact of the current model on patients

Poor understanding of OSA care: The system of OSA care presented barriers that prevented patients from understanding their OSA care. Patients were often unclear about the diagnosis or severity of OSA or the treatment plan. Overall, patients were unsure of what to expect:

"Each step is in isolation and you don't really feel what that connection is, you know, what's going to happen at your next appointment...what a CPAP machine was, what a mask looked like, what it would mean to wear that every night" (Patient)

Furthermore, in the absence of necessary information, patients perceived a lack of an overall care plan:

"[N]o sort of continuity of care long term, nor does there appear to be any bit of emphasis on continuity of care...none of this stuff ever gets sort of filtered back to a GP [general practitioner]" (Patient)

Disconnection of OSA and medical health: The fragmented system of care led patients to separate OSA from their other health problems. Patients perceived respiratory homecare companies to be technical providers for OSA treatment, whereas primary care physicians oversaw all other medical issues.

"[Care by respiratory homecare company] seems to be very specialized, and deals more with non-medical personnel than medical personnel" (Patient)

"I almost see [PAP] as 'oh, it's a separate machine that somebody sold me and I use it,' and wow, I don't know why...I just saw [primary care physician] yesterday and you were right I could have asked him those kind of questions" (Patient)

This disassociation of OSA care from medical care caused confusion among patients about how to address concerns with therapy.

Erosion of trust: Furthermore, patients and providers described a perception of conflict of interest among community homecare providers, who both perform home sleep apnea testing and

Table 3—Impact of current model of OSA care on patients.

Theme	Subtheme	Representative Quotes
Poor understanding of OSA care	Diagnostic uncertainty	"[T]he problem is that they don't provide you with...a report...they download the results and if the measurements are a certain interval they tell you have mild apnea or not...at the end of the day, in Alberta I think that I haven't got a complete or comprehensive diagnostic" (Patient)
	Lack of information from providers to patients	"[H]e did explain a little bit about what would happen at the clinic, so I was prepared when I went to [public sleep laboratory]...I think that probably the most in the dark I was, was how this is all going to work with treatment" (Patient)
Disconnection of OSA from medical health	Homecare providers as technical service providers	"[T]hey were technicians...more on the technical part of how to use your machine, and how to make, how to set it and that kind of stuff, but maybe that's all they need to know" (Patient)
	Patients do not view PCP as important player in OSA care	"I separated that from everything else from medical, I honestly don't see it as part of the medical system at all, weird I guess I better start talking to [PCP] about it" (Patient)
	Confusion about how to troubleshoot OSA therapy	"I guess that's another question for me to ask if I ever feel that they're not going, who do I go to, do I go to my family doctor or do I come back and see [PAP provider] 'cause I don't know the answer to that one" (Patient)
Erosion of trust	Conflict of interest among community providers	"[S]o many people are making a lot of money outside of the health care system on your suffering, really...I kind of felt like it was people taking advantage of a situation" (Patient)
	Questioning legitimacy of OSA care delivery	"[O]f course they tell you it's severe sleep apnea, they've got to sell the machine, now you know they've got to get you on the machine that's what they've got to do, and, like, I think there's a lot of people that don't need to be on the machine" (Patient)
	Preference for physician involvement	"[Sleep physician] did give me the initial, 'this is what you need to have, don't let them talk you into this'...I think that the initial prescription, maybe diagnosis and prescription has to come from somebody medically based" (Patient)

OSA = obstructive sleep apnea, PAP = positive airway pressure, PCP = primary care provider.

dispense PAP machines. This perception led to an erosion of trust:

"I felt like this was maybe not legitimate, like I was being pressured to [spend] all this money without really knowing why" (Patient)

Citing the trusting relationship with their PCP or credibility of specialist physicians, many patients expressed a desire for greater physician involvement:

"I would have preferred if my doctor followed it up a bit more...it kind of bothers me when I go to the person who diagnosed it themselves, it seems like a conflict there" (Patient)

Area 3: potential solutions to improve care delivery

Patients and providers offered several suggestions for system improvements. Broad themes are presented below and in **Table 4**; furthermore, specific ideas related to these themes are listed in **Box 1**.

Integrated model of care: Acknowledging the medical complexity of many patients with OSA, several providers suggested integrated care delivery models using multidisciplinary teams. The chronic disease management paradigm was presented as a way to provide ongoing management of OSA along with related comorbidities:

"[W]hy don't we have a team, a multi-disciplinary team, so there's a sleep apnea nurse that educates patients, that does...follow up and stuff like that, why don't we use the most appropriate provider to [provide] service, 'cause that's not always the physician" (PCP)

By integrating siloed care delivery systems into a single model of care, stakeholders believed that high-quality care could be provided for patients of varying clinical complexity.

Improved system navigation: Stakeholders highlighted the value of standardizing roles and care delivery processes to

Table 4—Potential solutions to improve OSA care.

Theme	Subtheme	Representative Quotes
Integrated model of care	PCPs and sleep specialists providing care along the continuum, with clear role definition	"I think using all the resources that exist, more efficiently, with the backbone being using each piece efficiently, right, using home care providers, sleep specialists, the hospitals, community labs, using them all efficiently to get the right patient to the right place at the right time" (Sleep specialist)
	Embedded respiratory therapists and specialist nurses within a primary care chronic disease management model	"[S]uperimpose the model that already exists for hypertension, and COPD, asthma and so on, right, so it's not, the physician isn't the center...it's the chronic disease nurse or could be a RT that then does all of that sort of day to day, you know, 'let's monitor your treatment every so often, and then like meet with the physician every two to three weeks'" (Respiratory therapist)
Improved system navigation	Standardized roles and care delivery processes	"[T]he respiratory therapy profession needs help creating that role and then the family doctor needs help in saying, 'ok, what is my job here', you know, because everyone's having some responsibility, professional responsibility" (Sleep specialist)
	Clinical guidelines and pathways with practical tips for OSA management	"If you can have some guideline process, where what type of patient you refer where...I could just access some central webpage that says, 'patients who are x, refer to this centre,' then that would be great" (PCP)
Technology as a facilitator	More effective use of telemedicine	"[S]peaking as a family doctor in a smaller town, we often have to deal with complex patients who have obstructed apnea or sleep apnea as one of their problems, and we could use some sort of remote consulting service to help us...it helps the physicians to deal with really difficult problems" (PCP)
	PAP machine downloads to facilitate case discussions	"[W]hen I provide the compliance data with the detailed report it opens up some great conversations and they're really trying to understand better what's going on...it's been a great tool for education purposes I guess as well, and collaboration" (Respiratory therapist)

COPD = chronic obstructive pulmonary disorder, OSA = obstructive sleep apnea, PAP = positive airway pressure, PCP = primary care provider, RT = respiratory therapist.

promote success of integrated models. Examples were cited from other medical specialties:

"[W]hether the heart attack happens in [rural town] or [urban centre], it is clear to everybody along the spectrum what needs to be done and who needs to be involved..." (Sleep specialist)

PCPs were supportive of such changes, but called for navigation guides and clinical pathways to bridge knowledge gaps and improve care coordination:

"[H]elpful to have more guidance on what tests we should order and which sleep centres are accredited. Perhaps a flowsheet to help FPs [family physicians] navigate the sleep testing." (PCP)

Although the merits of a single point of contact for referrals were acknowledged by the group, the logistics of implementing such a process in the current fragmented system made this a challenging short-term solution to problems with system navigation.

Technology as a facilitator: There were many examples of telemedicine being used in rural communities to address geographic disparities in sleep specialist capacity. Additionally, CPAP machine downloads facilitated communication between

homecare providers and PCPs. Stakeholders believed that such technologies could support integration strategies.

DISCUSSION

The results of this study suggest that OSA care by PCPs supported by respiratory homecare companies could address challenges with sleep specialist access. However, there remain barriers to optimal primary care management of OSA, including gaps in knowledge about OSA, difficulties in identifying appropriate clinical pathways, and uncertainty about where to turn when management problems arise. As a result, patients are poorly informed about their OSA, leading them to separate OSA from their overall health and eroding trust in the system. These problems could be mitigated by integration of all providers in a comprehensive model of OSA care, facilitated by improved system navigation and more effective use of technology. The findings of this study provide an important perspective on how key stakeholders view community-based OSA care delivery and its impacts on quality of care.

Box 1—Suggested system improvements.

Integrated Models of Care

- Increased number and geographic distribution of specialists and community sleep providers
- Respiratory therapists and specialist nurses embedded within primary care clinics (chronic disease management model)
- Patient support groups to facilitate education about disease/treatment

Improved System Navigation

- Clinical guidelines to inform appropriate use of resources and provide practical tips for management
- Standardized presentations/webinars for PCPs
- Regulations to clearly delineate roles and responsibilities of all providers
- Local navigation guides for management/referral of patients with different severities of OSA or medical complexity

Use of Technology

- Sleep diagnostic testing results and treatment information available in provincial EMR
- Centralized telephone/electronic helpline for PCPs (especially for rural practitioners)
- Educational tools for patients, with rapid telephone access to troubleshoot problems with therapy
- Increased use of telemedicine and remote monitoring of PAP therapy

EMR = electronic medical record, OSA = obstructive sleep apnea, PAP = positive airway pressure, PCP = primary care provider.

Difficulties in managing the high burden of OSA in the general population with a limited supply of sleep specialists have been documented in several jurisdictions^{16–19} and have prompted interest in primary care delivery models.^{21,26–28} Despite challenges with primary care management of OSA that were identified in this study, PCPs remained trusted providers that patients wanted more engaged in their care. Patients did not feel that specialty care was required, provided sleep specialists were available to support PCPs. This preference for care within the medical home aligns with previous literature.^{35–39} In prior trials of primary care management of OSA, PCPs received extensive education and support; these interventions addressed knowledge gaps and lack of role clarity that have been previously identified among PCPs^{29,33,34} and were highlighted as important strategies to address barriers in the current system.

Effective chronic disease management requires strong patient engagement; patients must understand their disease and management plan and feel empowered to obtain support when required.^{40,41} The results of this study suggest that such a foundation for patient engagement was absent; patients were confused about how OSA connected to their health and did not know how to navigate the system of care. Furthermore, despite evidence supporting associations between OSA and several other chronic diseases, the model did not convey a consistent message about how care for OSA should be obtained.

The evidence supporting nonspecialist care is mostly limited to patients with uncomplicated OSA.^{21,26–28} In the current study, stakeholders discussed care delivery for both uncomplicated patients and those with more complicated clinical presentations. The difficulties faced by PCPs in determining the appropriate clinical pathway for patients with different clinical phenotypes highlighted the need for integration of primary and specialty care to manage patients across the spectrum of sleep-disordered breathing severity. Suggestions mirrored prior literature describing optimal service delivery models for OSA.^{42–45}

This study has important limitations. First, it was conducted in a single Canadian province, which could limit

the transferability of these findings. However, the limited capacity of sleep specialists and subsequent reliance on OSA management by PCPs is shared by many jurisdictions.^{44–47} Thus, it is likely that these results are applicable more broadly. Second, most patients with OSA in Alberta are managed in a primary care setting; thus, it is possible that theirs was the dominant perspective in the analysis. The qualitative analysis suggests that this is not the case, as there were descriptions of several patient pathways and related impressions about the quality of care received. Finally, the number of survey responses was small relative to the more than 5000 PCPs in Alberta. Although responder bias cannot be eliminated, triangulation of data from different collection methods and across stakeholder groups suggested that the results were representative of the experience of patients with OSA and both PCPs and sleep providers in Alberta.

CONCLUSIONS

Although there is mounting research evidence supporting primary care delivery models for OSA, there are many potential challenges with such models in actual practice. These include variable access to care, gaps in provider knowledge, and a lack of clarity in provider roles. Essential components of redesigned OSA care include an integrated model that incorporates primary care providers and specialists, tools to improve system navigation, and more effective use of technology. Importantly, ongoing engagement of stakeholders is critical in the design, evaluation, and implementation of sustainable models of care to support their successful implementation.

ABBREVIATIONS

CPAP, continuous positive airway pressure

OSA, obstructive sleep apnea
 PAP, positive airway pressure
 PCP, primary care provider
 SDWG, Sleep Disorders Working Group

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