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## Original Research

# Evaluation of urban-rural differences in pharmacy practice needs in Maine with the MaPPNA

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### ABSTRACT\*

**Background:** Maine is a rural state with an aging population located in the northeastern United States. Pharmacists play an important role in serving the public's health as they are often the most available point-of-contact within a community.

**Objective:** To assess the current pharmacy practice needs as viewed by licensed pharmacists across our rural state, and to distinguish issues that are unique to rural pharmacy practice.

**Methods:** An online survey was sent to all licensed pharmacists in the state in the fall of 2014 (n=1,262) to assess their pharmacy practice needs, and specify an rural-specific needs, within the categories of (1) opioid misuse, abuse, and diversion, (2) challenges associated with access to healthcare, (3) poly-pharmacy use, (4) meeting the needs of special populations, (5) lack of antibiotic stewardship, and (6) resources, such as staffing.

**Results:** The response rate was 22.1 % (n=279). We found the most agreed upon issue facing pharmacists' in Maine is opioid use, misuse and diversion, followed closely by shortages in staffing. We also learned that pharmacists' view pharmaceutical care for older adults, those with low health literacy, and those with mental disabilities more time-consuming. Some urban-rural differences were discovered in with regard to the pharmacists' views; such as the magnitude of the distance barrier, and limited transportation options available to rural residents. Issues related to polypharmacy were viewed as more problematic by pharmacists practicing in urban versus rural sites.

**Conclusions:** Pharmaceutical care in Maine must focus on meeting the needs of the elderly, those with disabilities, and those with limited health literacy. As with the rest of the nation, opioids challenge pharmacy practice in a variety of ways. These findings clarify areas that present opportunities for pharmacists to focus more specifically on Maine's largely rural population.

**Keywords:** Community Pharmacy Services; Professional Practice; Rural Health; Rural Population; Health Services Needs and Demand; Maine

### INTRODUCTION

For the past two decades, one of our nation's overriding public health goals was focused on reducing or eliminating health disparities, including geographic disparities pertaining to rural health.<sup>1</sup> Today, Healthy People 2020 aims "to achieve health equity, eliminate disparities, and improve the health of all groups [including the rural populace]." Based on a nationally representative sample, the Health Information National Trends Survey (HINTS) survey found that rural residents are 1.7 times more likely to report health care avoidance in comparison to residents residing in a metropolitan area.<sup>2</sup> While the Affordable Care Act of 2010 includes provisions to minimize inequitable access to primary care, it does not ensure access. The shortage of health services and clinicians in rural communities is a national priority.<sup>3</sup>

Pharmacists can play a vital role in rural public health, and provide a readily available point-of-contact in the health care arena, especially for rural residents. As our nation begins to embrace inter-professional education<sup>4</sup>, and inter-professional practice<sup>5</sup>, the important role pharmacists can play comes into light. The American Society of Health-System Pharmacists recognized health-system pharmacists' role in maintaining and promoting public health<sup>6</sup>; and the American Public Health Association first recognized the potential role of pharmacists in 1981 (revised in 2006).<sup>7</sup> The 2006 version has six stated desired action items, one of which is to "Urge Congress to charge Centers for Medicaid and Medicare (CMS) to recognize pharmacists as health care providers within its programs (e.g., under Medicare) to function in public health capacities and to be eligible for proper reimbursement in such capacities. As is the case with all licensed providers, this should be restricted to services provided within the terms of the state pharmacy licensure regulations." Another action item is to "reiterate the need for increased awareness of the role of pharmacists in public health through the dissemination of information among schools of public health, professional societies, policy-makers and other health care employers." Other action items relate to educating pharmacists in public health<sup>7</sup>; there are already 18 combined PharmD / Masters in Public Health degree program offered, an indicator of the rising recognition.<sup>8</sup>

With regard to educating pharmacists, a review of all U.S. schools of pharmacy was conducted in 2011 to identify specialized education and training

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geared to pharmacy practice in rural health. The review uncovered schools of pharmacy with “moderate” or “formal” integration of rural health in their curriculum. And while many schools were identified as offering such, the conclusion was that that to address the workforce shortages and overcome the unmet need for quality pharmacy care in rural America, more education and training with a rural focus is needed.<sup>9</sup> Indeed, rural pharmacy practice literature in the United States was sparsely noted until the late 1990s. At that time, over 80% of rural pharmacies reported declining profits from drug sales.<sup>10</sup> It is evident from the survey they conducted in that era, that affordability, both from the perspective of the consumer and from the perspective of the pharmacy store owner, was the emerging issue. Bono and Crawford noted that chain pharmacy stores are at an advantage over independent stores since Medicare Part D went into effect.<sup>11</sup>

On one hand, “the evolution of pharmacy practice in the last 15 years has created expanded public health access” (p. 140).<sup>8</sup> On the other, as stated by Dr. A Kaufman at a White House Panel in 2103, “Pharmacists are the most highly trained, underutilized members of the healthcare team”.<sup>12</sup> While momentum is building in the recognition and even pockets of change in practice to fully realize the important role pharmacists can play in improving the public’s health, opposing forces are at work. The closure of independently owned pharmacies and rural pharmacies is alarming, and has prompted several policy briefings by the Rural Health Research and Policy Center of the University of Iowa; most notable findings can be summarized as thus: (1) From March 2003 to December 2013, there was a loss of 924 (12.1%) independently owned rural pharmacies in the United States. Most of the store closures occurred between 2007 and 2009; from 2010-2013, the trend has continued, although the decline is not as precipitous as in earlier years. (2) There were 490 rural communities that had one or more retail pharmacy (including independent, chain, or franchise pharmacy) in March 2003 that had no retail pharmacy in December 2013.<sup>13</sup>

According to the 2010 Census, Maine is the oldest state (18.3% over 65 years versus 14.5% nationwide) and has the highest percentage living in rural areas.<sup>14</sup> Both issues present a potential challenge for pharmacy practice - one related to the increased medication needs and other related to issues of access. The purpose of this study was to assess the current pharmacy practice needs as viewed by licensed pharmacists across our rural state, and to distinguish issues that are unique to rural pharmacy practice. Additionally, we offer the Maine Pharmacy Practice Needs Assessment (MaPPNA) as an assessment tool.

## METHODS

In the spring of 2014, our research team informally gathered information from known contacts, such as friends and colleagues; and from the current literature as to anticipate the needs within rural

pharmacy.<sup>10,15</sup> Six areas of need were identified: opioids, access to health-care, polypharmacy, specific populations including the elderly, antibiotic stewardship, and lack of resources.

**Instrument:** Each of the six categories of the MaPPNA contained three to seven questions which were designed by the research team to address specific areas of concern. For example, four questions in the opioid area included misuse, diversion, theft, and access to legitimate use; three questions about polypharmacy included limited time for medication reconciliation, limited time for proper follow-up with patients, and inadequate discharge education from a hospital (to view the entire instrument, see the online Appendix). The primary assessment items utilized a 6-point Likert scale where 1=strongly disagree and 6=strongly agree. Demographic information such as type of practice setting (retail chain, private / independent retail, in-patient hospital care, and ambulatory care), professional position, location, and qualifications were also gathered. The MaPPNA also included an open-ended comment section to address any area of concern not previously identified.

**Recruitment procedures:** University Institutional Review Board (IRB) approval was obtained in the Fall of 2014, and the survey was anonymous. One week following a pre-notification e-mail in mid-October, the survey link was sent to all licensed pharmacists in the State (n=1,262) to assess their pharmacy practice needs. A 5 USD gas card was offered to incentivize participation. There was also a drawing to win one of three 50 USD gift cards. A reminder e-mail was sent one week later with a short-term deadline (October 31, 2014). In early November, a third and final e-mail was sent to thank all those who had responded and officially extend the deadline. The survey was closed November 10, 2014.

**Statistical Analysis:** The data from Survey Monkey® was downloaded and saved as an Excel file. Using the zip codes collected in the survey, we added a variable using the 2010 Rural-Urban Commuting Area Codes.<sup>16</sup> RUCA are a Census tract-based classification system that utilizes the standard Bureau of Census Urbanized Area and Urban Cluster definitions in combination with work commuting information to characterize all of the nation’s Census tracts regarding their rural and urban status and relationships. The Excel file was then exported into SPSS (version 21.0) for analyses. For the descriptive statistics, the percent of respondents who “agreed” or “strongly agreed” with an identified need was calculated. For the inferential analyses, an independent t-test was run to compare mean score on needs with RUCA codes divided into urban and rural as described elsewhere.<sup>17</sup> Cronbach’s alpha<sup>18</sup> was calculated as an index of internal consistency for the MaPPNA and each area. Associations among items were determined with Spearman’s rho ( $r_s$ ).

The open-ended comments throughout the survey were read and content analysis was used to decipher common themes. These comments were read and coded by two independent reviewers.

Table 1. Pharmacy practice needs in Maine. PCP: primary care provider.

Area	% Agreement <sup>A</sup>	n	Total Mean <sup>B</sup> (SEM)	Urban Mean <sup>B</sup> (SEM)	Rural Mean <sup>B</sup> (SEM)
Special populations					
older adults	92.4	276	5.43 (0.66)	5.45 (0.06)	5.43 (0.05)
patients with low health literacy	83.8	271	5.15 (0.88)	5.19 (0.08)	5.11 (0.07)
patients with mental disabilities	77.9	271	5.09 (0.83)	5.19 (0.07)	4.99 (0.07)*
patients with substance abuse/addiction	74.9	271	4.93 (1.11)	4.99 (0.09)	4.90 (0.10)
migrant workers	59.4	202	4.49 (1.38)	4.74 (0.13)	4.20 (0.15)**
veterans	56.7	263	4.54 (1.10)	4.62 (0.10)	4.47 (0.09)
patients with physical disabilities	54.4	270	4.55 (1.09)	4.65 (0.09)	4.46 (0.10)
Opioids <sup>Ψ</sup>					
misuse	85.9	263	5.32 (0.86)	5.28 (0.07)	5.39 (0.08)
diversion	76.8	267	5.03 (1.08)	4.97 (0.09)	5.10 (0.10)
access to legitimate use	54.2	260	4.32 (1.38)	4.18 (0.13)	4.46 (0.12)
store security	53.0	247	4.24 (1.57)	4.11 (0.15)	4.37 (0.14)
Resources					
staffing	74.2	267	4.99 (1.26)	5.10 (0.10)	4.87 (0.12)
drug information	50.4	268	4.44 (1.23)	4.46 (0.11)	4.41 (0.11)
telepharmacy	29.7	239	3.65 (1.40)	3.83 (0.13)	3.50 (0.13)
Inventory	25.1	263	3.56 (1.31)	3.63 (0.12)	3.47 (0.11)
Polypharmacy					
limited follow-up with patient	65.1	275	4.65 (1.25)	4.84 (0.10)	4.46 (0.11)*
limited medical reconciliation	63.1	274	4.65 (1.25)	4.75 (0.11)	4.55 (0.11)
inadequate discharge teaching	60.1	263	4.58 (1.20)	4.77 (0.11)	4.40 (0.10)*
Access					
affordability	57.7	272	4.61 (1.05)	4.63 (0.10)	4.58 (0.09)
limited transportation	34.1	270	3.91 (1.22)	3.72 (0.12)	4.10 (0.09)*
limited access to PCP	33.6	271	3.79 (1.36)	3.76 (0.12)	3.84 (0.11)
too far	21.4	271	3.42 (1.34)	3.27 (0.12)	3.60 (0.11)*
Antibiotics					
over-prescribing	47.2	269	4.26 (1.21)	4.43 (0.10)	4.07 (0.11)*
patient non-adherence	44.8	261	4.21 (1.08)	4.31 (0.11)	4.13 (0.09)
inappropriate prescription	35.1	259	3.89 (1.22)	3.97 (0.11)	3.78 (0.10)

<sup>A</sup>agree & strongly agree collapsed, <sup>B</sup>average of six-point (strongly-disagree to strongly agree) ratings, <sup>Ψ</sup>mean and percent agreement, but not rural urban comparison, presented previously, <sup>35</sup> \**P* < .05 or \*\* *P* < .01 versus urban.

## RESULTS

The response rate of the survey was 22.1% (n=279 of 1,262); though some items were not completed by all respondents. Approximately 40% were from large chain retail pharmacies, and almost 25% were from in-patient hospitals; 14% were from independent pharmacies. The others were from ambulatory care sites, long-term care facilities or "other" (other including academia, nuclear medicine, or home infusion to name a few). Half of respondents were staff pharmacists and one-quarter were pharmacy supervisors. Other respondents were in administration, a store owner, in academia, or "other" (other including clinical pharmacists, consultants, or floating positions to name a few). Over 40% respondents have been practicing 25 years or more and, about 12% were within their first two years. An equal number of men and women completed the survey. Respondents were representative for sex of the pharmacist population in the state. Most (69%) report having worked in both urban and rural settings, whereas 17% had worked in urban-only settings and 14% in rural-only settings, yet, over a quarter believe they serve over 75% rural populace. Based on RUCA scoring and zip code, there were 48% rural and 52% urban respondents. Pharmacists in urban and rural environments were indistinguishable in terms of gender, education and specialty board certification. There was a non-significant tendency for more rural (47%) than urban (37%) pharmacists to have been practicing 25 years or more (chi-square=2.94, p=0.09)

Table 1 displays the percent agreement with each item, and its mean and the standard error of the mean (SEM). The mean and SEM are also presented by urban and rural status. The most "agreed" upon needs were related to opioid misuse and diversion. Agreement was also high for issues related to polypharmacy, such as limited opportunity for medication reconciliation or for patient follow-up. As for specific populations, pharmacists agreed that serving the needs of older adults, those with low health literacy, and those with mental disabilities took additional time, consideration, or accommodations. The costs of medications (e.g., affordability) were viewed with high agreement. Staffing was also identified as a key area of need by almost three-quarters of respondents. When viewed as scales, in order of agreement, pharmacists viewed the six scales as follows: special populations (mean score=4.90, SD= 0.69), opioids (mean score=4.77, SD=0.86), polypharmacy (mean score=4.64, SD=1.03), resources (mean score=4.15, SD=0.89), antibiotic stewardship (mean score=4.11, SD=0.93), and access (mean score=3.93, SD=0.95).

The internal consistency of the 25-item MaPPNA was 0.861. Cronbach's alpha for each scale was Polypharmacy: 0.806, Special Populations: 0.788, Access: 0.758, Antibiotics: 0.698, Opioids: 0.637, and Resources: 0.648.

The urban-rural comparisons show seven items with statistically significant differences. Pharmacists located in rural settings viewed both distance and limited access to transportation as access barriers



more than their urban counterparts). Pharmacists practicing in urban locations viewed over-prescribing antibiotics as an issue more so than pharmacists in rural settings; and they viewed migrant workers and patients with mental disabilities as requiring additional time, consideration, or accommodations than did their rural counterparts. Pharmacists practicing in urban locations viewed both limited follow-up with patients and inadequate discharge teaching from hospitals as an issue more so than pharmacists in rural settings. No other urban/rural differences were found. When the analyses were repeated with the six scales, the urban-rural differences for the opioid scale ( $t=2.96$ ,  $p=0.003$ ) and the access scale ( $t=2.26$ ,  $P=0.025$ ) remained significant while the four other scales did not.

Associations within each scale were determined. Within Special Populations, there was a moderately high correlation between mental disabilities with low health literacy ( $r_s(265)=0.56$ ,  $P<0.0005$ ), migrants ( $r_s(199)=0.53$ ,  $P<0.0005$ ), and physical disabilities ( $r_s(266)=0.56$ ,  $P<0.0005$ ). Ratings of veterans were positively correlated with those of the physically disabled ( $r_s(258)=0.55$ ,  $P<0.0005$ ). In the Opioids area, the correlation was larger for misuse with diversion ( $r_s(255)=0.67$ ,  $P<0.0005$ ) than with store security ( $r_s(237)=0.20$ ,  $P<0.005$ ) or legitimate access ( $r_s(249)=0.15$ ,  $P<0.05$ ). Access was associated with security ( $r_s(239)=0.41$ ,  $P<0.0005$ ). Within Polypharmacy, inadequate discharge teaching was equivalently associated with the follow-up ( $r_s(261)=0.50$ ,  $P<0.0005$ ) and medical reconciliation ( $r_s(259)=0.50$ ,  $P<0.0005$ ). Discharge was strongly correlated with follow-up ( $r_s(271)=0.79$ ,  $P<0.0005$ ). In the Access category, limited transportation was associated with limited access to a prescriber ( $r_s(262)=0.55$ ,  $P<0.0005$ ) and to living too far from their pharmacy ( $r_s(265)=0.62$ ,  $P<0.0005$ ). Within Antibiotics, over-prescribing showed a substantial correspondence with inappropriate prescribing ( $r_s(256)=0.67$ ,  $P<0.0005$ ).

The results of the analysis of the qualitative data yielded a total of seven emergent themes including: (1) the need for more support staff (pharmacy technicians), (2) the struggle to keep up (i.e., time demands), (3) the saturation of the pharmacy job market, (4) the desire for effective collaborative practice, (5) the struggles with low reimbursement and insurance difficulties, (6) the need for additional time for patient care, and (7) the limitations of large retail chains (e.g., sales focus). Two themes had more comments than the others: the desire to have additional time to provide more direct patient care, and the need for additional support staff. These two ideas were often found intertwined. Examples of such comments include:

- "The pace in pharmacy is much more hectic than earlier in my career, there is not enough time to tend to our customers the best we should be doing, and I feel bad about that."
- "The practice of Pharmacy is a service industry. You cannot deliver meaningful service if the

provider does not have time to spend with patients."

- "I think that many if not most of the issues identified could have improved outcomes if staffing was increased to enable pharmacists to spend more time with patient education."
- "We don't have a pharmacist problem, we have a technician problem. Any changes in pharmacy practice will not be properly achieved without the support of a highly qualified pharmacy technician."

## DISCUSSION

This study sought to identify pharmacy practice needs in Maine and determine whether differences exist between pharmacists practicing in rural versus urban settings. The results show that key issues in Maine are related to opioid use and diversion, and serving the needs of the elderly and other special populations, notably those with low health literacy and those with mental disabilities.

### Opioids

The opioid epidemic is present, and opioid overdoses have become an increasing problem nationwide. Every day, in the U.S., 46 people die as a result of overdose from prescription painkillers.<sup>19</sup> The Maine Prescription Monitoring Program indicates that there are enough opioids prescribed to cover every man, woman and child in the state. Over three-quarters of pharmacists in Maine are aware of the potential that the opioids they dispense may be misused for non-medical purposes. Similarly, 87.5% of pharmacists in Tennessee also believed that opioid pain reliever abuse was a problem at their practice.<sup>20</sup> One common theme found in the Maine survey was the desire for more time to adequately counsel patients. The sample in Tennessee indicated that less than one-fifth of prescribers or dispensers spent adequate time communicating with patients about the abuse potential of opioids.<sup>20</sup>

### Special Populations

Over 90% of our survey recipients agreed that older adults take "additional time / considerations / accommodations". A recent study in Ohio found that 40.6% of adults older than 65 years used multiple pharmacies and 35.6% had polypharmacy (five or more prescription medications).<sup>21</sup> Of all seniors with polypharmacy, about 57% had contraindicated drug combinations. Expert opinion is similar, stating that nearly 50% of older adults take one or more medications that are not medically necessary.<sup>22</sup> Over 60% of Maine pharmacists viewed issues related to polypharmacy of concern. It is interesting to note the urban-rural difference found with regard to discharge teaching and patient follow-up. Based on our results, it could be speculated that those practicing in rural locations have more time (fewer patients) to teach properly during hospital discharge, and fewer clients to follow-up with after the initial visit.

The survey item regarding special populations highlighted the increased challenges in serving not only the elderly, but the disabled, addicted, and those with low health literacy. Schools of pharmacy have widely adopted strategies to train future pharmacists to be skillful in serving those with low health literacy, and to be culturally competent. Both international and national governmental and non-governmental web-resources are available (e.g., Think Culture).<sup>23</sup> Of interest is the survey item pertaining to migrant workers. In our survey, nearly one-third of respondents chose not to answer the question, perhaps given their limited interaction with migrant workers or their unwillingness to respond to an item potentially of concern to them. In an earlier study of pharmacy services in a rural and ethnically diverse region of Texas, the researchers found that deficiency in English was associated with lack of access to delivery of medication ( $P < 0.001$ ).<sup>24</sup> Given Maine's predominance of non-Hispanic whites (95.2% in 2013)<sup>14</sup>, it makes sense that pharmacists view migrant workers as requiring more time / consideration / accommodation. The finding that pharmacists practicing in urban locations agree more strongly than those in rural locations may have to do with the number they see. It is a finding worthy of further study.

### Rural issues

The rural nature of the state poses unique challenges to access, though surprising, only distance and transportation were viewed as more problematic. Maine has done well to place primary care providers in rural locations with their Federal Qualified Health Centers and, unlike many other states, Maine has not closed any of its critical access hospitals though most have undergone merging with larger systems, and some specialty services have disappeared. In our survey, access to a PCP was seen as no more or less of an issue urban versus rural. Also viewed equally across urban and rural was the high agreement the statement "patients cannot afford their medications" (57.7%). Though Maine has pockets of prosperous communities, the per capita income of Maine's citizens is the lowest in New England and ranks 28<sup>th</sup> in the country according to 2012 data.<sup>25</sup> It is surprising there was not higher agreement with the statement among those practicing in rural communities. Indeed, an early survey across North and South Dakota and Minnesota found that 70% of rural pharmacists agreeing that there are financial barriers to pharmacy services.<sup>15</sup>

Tele-health, tele-pharmacy, e-health are emerging as the most viable solution to rural health care delivery. The Veteran's Health Administration was an early adopter of telepharmacy.<sup>26</sup> It has been used for medication reconciliation at discharge<sup>27</sup>; to improve adherence<sup>28</sup>; and for cancer care in developing world.<sup>29</sup> It is interesting to note that less than one third of Maine pharmacists agree that tele-pharmacy would help. It could be lack of broadband access in our vast state. Maine has ranked close to the bottom on lists of broadband speeds by state, including a recent report that ranks Maine 49<sup>th</sup> out of the 50 states.<sup>30</sup> Currently, a

Maine-based limited liability corporation has plans to bring high-speed broad band internet access to 90% of the populace within two years.<sup>31</sup>

### Antibiotics

Another curious finding was how few pharmacists viewed antibiotic stewardship an area of need. Less than half agrees that over-prescribing was an issue, and even fewer believed non-adherence was an issue. Antibiotic resistance is a well-recognized global issue. Preventing and reducing antibiotic resistance in the community has been called "a critical public health imperative".<sup>32</sup> In a report to the President of our Country, it has been estimated that antibiotic-resistant infections cost our economy 20 to 35 billion dollars annually.<sup>33</sup> About one-third of our survey sample agreed there was some inappropriate prescribing.

### Staffing and Workload

One of the most agreed upon needs, staffing issues, seemed to strike deep into the minds of the respondents. Much in-line with the comments we received, it has been noted that "the continued increase in workload for pharmacists is problematic, because ... higher workload for pharmacists is likely to make it difficult for pharmacies to offer drug therapy services in spite of the growing need for such services in the population" (p. 294).<sup>34</sup> While our state has recently struck down the law that limited the number of pharmacy technicians per pharmacist (formerly 3:1), respondents are reeling about the lack of staff. Given that the majority of our respondents are from large chain retail establishments, it seems clear the profit is the bottom line to the corporate headquarters, none of which are located in Maine. Often times, pharmacists in retail pharmacies are performing the roles that technicians could fill, and thereby over-worked with little to no time for patient counseling. Meanwhile, reimbursement for counseling is lacking in our state. Many states have given pharmacists provider status, but Maine is behind on this issue.

### Limitations

This study is not without limitations. Only a 22% response rate was achieved, and this sample may or may not be representative of the state wide population of pharmacists. We were able to verify the percent female was representative, though other demographics are not tracked by the State Board of Pharmacy. While the response rate was lower than desired, the sample includes a wide range of years in practice, practice settings, and geographic location (urban and rural). We found that over 40% of respondents have been in practice for over 25 years, which has content validity given that 70% of respondents have a bachelor's degree, the terminal degree before 2000 when the Accreditation Council on Pharmacy Education began requiring that schools of pharmacy convert to an all-PharmD curriculum. A survey in North Dakota found there was a higher proportion of PharmDs in urban areas compared with rural areas (40.8% vs 15.1%,  $P < 0.01$ ).<sup>35</sup> Another survey in Wisconsin found that rural "non-core" counties had a higher proportion of pharmacists 50 years and older than micropolitan

counties.<sup>34</sup> In addition, the survey relies on self-report which is a method always open to bias; however, given the non-threatening nature of the survey and open-ended responses, it appears that respondents felt free to voice their views. Furthermore, the analyses included numerous t-tests which raises the possibility of Type I error. To test this possibility, t-tests were repeated within the six scales and while access to care and opioid views still varied by urban / rural setting, the other categories of need were not significantly different urban versus rural. A fourth possible limitation is the generalizability of these Maine results, though based on other survey data in largely rural states, the data appears broadly relevant to rural health care delivery issues.

## CONCLUSIONS

This study sought to identify pharmacy practice needs in Maine and determine whether differences exist between pharmacists practicing in rural versus urban settings. While there were some differences found, agreement of important needs is fairly consistent across the largely rural state of Maine. Future survey research should consider the issues noted in earlier studies including the availability (supply) of pharmacists in rural areas; the impact of chains, mail order and internet pharmacies; shifting payment sources; isolation from colleagues; long work hours and irregular schedules; lack of relief coverage; reduced availability of pharmacy technicians; access to training to increase services; changing prescriber types (from physicians to nurse practitioners); and lack of fast and reliable technology. Consumer surveys can clarify rural issues including proximity of services, transportation, pharmacy choice factors, satisfaction with pharmacy services, impact of drug costs, etc. The schools of pharmacy in Maine can also foster discussions among pharmacy thought leaders, public health professionals and legislators to find innovative approaches to optimizing pharmaceutical care delivery to rural populations.

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## CONFLICT OF INTEREST

All authors have no relevant conflicts of interest.

## EVALUACIÓN DE LAS DIFERENCIAS URBANO-RURAL EN LAS NECESIDADES DE LA FARMACIA PRÁCTICA EN MAINE CON EL MaPPNA

### RESUMEN

**Antecedentes:** Maine es un estado rural con una población envejecida localizado al noreste de los Estados Unidos. Los farmacéuticos desempeñan un papel importante sirviendo la salud del público, ya que a menudo son el punto de contacto más disponible en una comunidad.

**Objetivo:** Evaluar las necesidades de farmacia práctica actuales desde el punto de vista de los farmacéuticos registrados en nuestro estado rural, e identificar problemas que son específicos del ejercicio rural de la farmacia.

**Métodos:** Se envió un cuestionario online a todos los farmacéuticos registrados en el estado en otoño de 2014 (n=1.262) para evaluar sus necesidades de la práctica, y las necesidades específicas del rural, con las categorías de (1) mal uso, abuso y uso recreativo de opiáceos, (2) retos asociados con el acceso a la sanidad, (3) uso de polimedicación, (4) satisfacción de las necesidades de poblaciones especiales, (5) falta de control antibiótico, y (6) recursos, tales como el personal.

**Resultados:** La tasa de respuesta fue del 22,1% (n=279). Encontramos que la mayoría está de acuerdo que el mayor problema a los que se enfrentan los farmacéuticos es el uso, abuso y uso recreativo de opiáceos, seguido de cerca por la escasez de personal. Aprendimos también que los farmacéuticos ven la atención farmacéutica a ancianos, a los de baja literacia en salud y a los que padecen discapacidades mentales como más consumidora de tiempo. Se descubrieron algunas diferencias entre urbano-rural en la visión de los farmacéuticos tales como la magnitud de la barrera distancia, y las limitadas opciones de transporte disponibles para los residentes rurales. Los asuntos relacionados con la polimedicación eran vistos como más problemáticos por los farmacéuticos ejerciendo en ambiente urbano.

**Conclusiones:** La atención farmacéutica en Maine debe centrarse en satisfacer las necesidades de los ancianos, de los que tienen discapacidades y de los que tienen baja literacia en salud. Como en el resto del país, los opiáceos amenazan el ejercicio de la farmacia de varios modos. Estos hallazgos clarifican áreas que representan oportunidades para que los farmacéuticos se centren más específicamente en la población mayoritariamente rural de Maine.

**Palabras clave:** Servicios de Farmacia Comunitaria; Practica Profesional; Salud Rural; Población Rural; Necesidades y Demandas de Servicios de Salud; Maine

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