





Older and Wiser? The Need to Reexamine the Impact of Health Professionals Age and Experience on Competency-Based Practices

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Jing Xu, PhD, MHA¹,
Kristen Hicks-Roof, PhD, RDN, LDN, FAND² ,
Chloe E. Bailey, MHA, BHA¹ , and
Hanadi Y. Hamadi, PhD, MHA¹ 

Abstract

Introduction: Delivery of healthcare services makes up a complex system and it requires providers to be competent and to be able to integrate each of the institute of medicine's (IOM) 5 core competencies into practice. However, healthcare providers are challenged with the task to be able to understand and apply the IOM core competencies into practice.

Objective: The purpose of the study was to examine the factors that influence health professional's likelihood of accomplishing the IOM core competencies.

Methods: A cross-sectional study design was used to administer a validated online survey to health providers. This survey was distributed to physicians, nursing professionals, specialists, and allied healthcare professionals. The final sample included 3,940 participants who completed the survey.

Results: The study findings show that younger health professionals more consistently practice daily competencies than their older counterparts, especially in the use of evidence-based practice, informatics, and working in interdisciplinary teams. Less experienced health professionals more consistently applied quality improvement methods but less consistently used evidence-based practice compared to their more experienced counterparts.

Conclusion: There is a need to understand how health professionals' age and experience impact their engagement with IOM's core competencies. This study highlights the need for educational resources on the competencies to be tailored to health providers' age and experience.

Keywords

health professionals, accomplished competency, patient-centered care, interdisciplinary team, evidence-based practice

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Introduction

Competence has been defined as “the ability of the practitioner to practice safely and effectively to a professional standard” (Storey et al., 2002). The Institute of Medicine (IOM), now named the National Academy of Medicine, established a set of 5 core competencies that “all health professionals [are] educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics” (Knebel & Greiner, 2003). As the United States healthcare system continues to have complex, multifaceted medical issues,

it requires providers to be competent and to be able to integrate each of the 5 core competencies into practice. Physicians, nursing professionals, medical specialists,

¹Department of Health Administration, University of North Florida, Jacksonville, United States

²Department of Nutrition & Dietetics, Brooks College of Health, University of North Florida, Jacksonville, United States

Corresponding Author:

Kristen Hicks-Roof, Department of Nutrition & Dietetics, Brooks College of Health, University of North Florida, Building 39, Room 3060, 1 UNF Drive, Jacksonville, FL 32224, United States.
Email: hicks.roof@unf.edu



and allied healthcare professionals comprise the 4 main classifications of healthcare professionals. Each provider has a unique role to play in patient care; however, all providers should be competent to able to provide services to patients.

Review of the Literature

Modern healthcare services have begun to see a shift in the traditional paternalistic approach of a provider teaching down to a patient to more patient-centered care (PCC) approach (Delaney, 2018; Härter et al., 2017). Providers who have engaged patients in a PCC approach have resulted in positive impacts on satisfaction and self-management of disease (Poitras et al., 2018; Rathert et al., 2013). While PCC is the gold standard, there are no standardized parameters that have been set forth to deliver such care. Several requirements make up PCC, some of which include relationship building, explicit education, collaboration, and shared power and responsibility (Ogden et al., 2017). Berghout et al. (2015) showed that viewpoints about the key elements of PCC differed among providers, yet all were in agreement that coordination of care is one of the most important. Ultimately, PCC can only be accomplished when it is broadened beyond the patient-provider dyad (Fix et al., 2018; Rahman et al., 2019).

Interprofessional (IP) collaboration, IOM's second core competency, is defined as multiple providers from different professional backgrounds working together with patients and families to deliver the highest care (Gilbert et al., 2010). It has been established that disjointed care from ineffective communication and poor IP team performance is a contributor to adverse health events, poorer patient health outcomes, and clinical errors (Titzer et al., 2015; Zook et al., 2018). Rather, when continuous care is provided by an IP team, there are improved outcomes in practice efficiencies and select patient outcomes (Coufal & Woods, 2018; T. W. Farrell et al., 2018; Nagelkerk et al., 2018; Shah et al., 2018). These findings suggest IP collaboration is imperative to successful healthcare delivery, yet the execution of this approach continues to be a challenge. By using an evidence-based practice approach, the interprofessional team can share knowledge and resources to provide the best patient care.

Implementation of evidence-based practice (EBP) is necessary to protect the quality and safety of healthcare services. When providers practice using evidence, it can increase their self-efficacy in delivering care (B. Farrell et al., 2018). With that being said, there are challenges as "new" science breakthroughs and media-hyped intervention strategies take the stage. Providers are bombarded with the increased availability of evidence; thus, it is essential to be competent in critically appraising each

study and how to apply the results. It has been shown that evidence-based practices vary based on providers' knowledge, beliefs, and practice culture (Burke & Gitlin, 2012; Melnyk et al., 2018). There has been a calling need for more regular and frequent updating of clinical practice guidelines, based on the current research evidence, to be available to providers so they can implement EBP (Shekelle, 2018). One strategy to gather more data to update clinical practice guidelines is by understanding the value of an in-house quality improvement.

Quality improvement (QI) initiatives are important for providers to be able to understand and participate in. Healthcare organizations are targeting the Triple Aim, to improve patient outcomes, provide a better patient experience, and ultimately reduce cost (Berwick et al., 2008). QI projects may include improving the process of delivering healthcare services, safety, clinical workflow, and patient satisfaction (Hunt et al., 2018). These QI initiatives require a multifaceted commitment due to the financial cost, training, and materials and providers involved. QI projects are successful by improving patient satisfaction and services provided (Skaggs et al., 2018). QI goes hand-in-hand with IOM's fifth competency, utilizing informatics.

Health informatics uses health-related data to discover and make decisions in healthcare. Clinical work is increasingly completed using electronic health record (EHR) systems and computerized tools. Yet the research demonstrates that many healthcare providers have insufficient knowledge and training on capturing, analyzing, and applying health data (Clauson et al., 2018; McNeil et al., 2005; Walpole et al., 2016). Advancements in analytic tools to capture health data, such as the EHR system, can assist in supporting clinical decision-making to advance the quality of care, promote inter-professional collaboration, and improve patient outcomes (Ankem et al., 2017). Participation in health informatics can provide valuable evidence-based information that can be translated into patient-centered care, ultimately improving how our healthcare system functions.

Recent statistics demonstrate physicians ages 55 to 65 years old make up the largest distribution of all United States physicians (Michas, 2020). Moreover, nearly half (47.5%) of all nurses in the United States are aged 50 or older (Spencer, 2020; U.S. Department of Health and Human Services et al., 2019). Observational data have demonstrated that older healthcare professionals may provide lower-quality care and contribute to poorer patient outcomes compared to their younger counterparts. Younger nurses associate with higher levels of evidence-based practice, an essential competency to deliver the highest quality of care (Melnyk et al., 2018). Although aging providers have greater skills training, personal health concerns, advancements in

computerization, and shift work are all common challenges for aging providers (Choudhry et al., 2005; Letvak et al., 2013; Tsugawa et al., 2017; Uthaman et al., 2016).

Research Objective

Healthcare providers are challenged with the task to be able to understand and apply the IOM’s core competencies into practice. This study aimed to investigate the factors that may influence the health professional’s likelihood of accomplishing the IOM’s core competencies. We hypothesized that younger and less experienced health professionals are more likely to engage in competency-based practices than older and more experienced health professionals.

Materials and Methods

Sample and Study Design

The current study was a part of a larger 20-question survey instrument. This survey was developed using a previously validated survey which was supplemented with additional questions to address the IOM’s core competencies and practice behaviors (Hicks & Murano, 2016). The survey was comprised of 8 demographic questions, 9 questions related to nutrition services and care, and 3 questions related to core competencies. This revised survey underwent both face and construct validity by a team of 6 healthcare professionals and researchers. Suggested modifications were incorporated to enhance reliability and readability.

One targeted outcome of this survey was to determine which of the Institute of Medicine Core Competencies were regularly addressed in practice. Participants were asked to select all that apply to which competencies they accomplish daily. Demographic items were included to determine primary credentials, gender, practice setting, years of experience, and age.

The participants in this survey were a convenience sample of Florida healthcare providers. The survey was distributed to a total of 350,568 emails which included physicians (medical doctor & osteopathic physician), nursing professionals (registered nurse, advanced practice nurse, licensed practical nurse), specialists (optometry, dentistry), and allied healthcare professionals (registered dietitian, physician assistant, physical therapist, pharmacist, occupational therapist, social worker, clinical mental health counselor) (Association of School of Allied Health, 2018).

Participants

In all, there were a total of 3,940 survey participants with an average response rate of 71.6%. Of those participants

that responded, 770 (19.5%) were male and 3,118 (79.1%) were female (see Table 1). The majority of respondents were nurses (1,868), followed closely by allied health providers (1,232). Physicians and medical specialists consisted of only 12.1% and 9.0% of participants. The largest age group was 35–54 year-old health providers at 41.7%, and the second-largest age group was 55–64 year-old health providers at 28.5%.

Table 1. Descriptive Statistics of Participants, n=3940.

Demographics	f	%
Gender		
Male	770	19.5%
Female	3118	79.1%
Prefer not to answer	32	0.8%
N/R	20	0.5%
Credential group		
Physicians	478	12.1%
Nursing	1868	47.4%
Medical specialists	353	9.0%
Allied health providers	1232	31.3%
N/R	9	0.2%
Age group		
18–24	47	1.2%
25–34	624	15.8%
35–44	707	17.9%
45–54	939	23.8%
55–64	1121	28.5%
65–74	424	10.8%
75–84	65	1.6%
85+	5	0.1%
N/R	8	0.2%
Years of experience		
In training	26	0.7%
<5 years	567	14.4%
6–10 years	592	15.0%
11–20 years	840	21.3%
21 years+	1903	48.3%
N/R	12	0.3%
Location of practice		
Rural	429	10.9%
Suburban	1870	47.5%
Urban	1484	37.7%
Online/remote	115	2.9%
N/R	42	1.1%
Primary practice setting		
Teaching hospital	610	15.5%
Non-teaching hospital	693	17.6%
Private practice	651	16.5%
Group practice	98	2.5%
Outpatient clinic	549	13.9%
Inpatient clinic	59	1.5%
Home care	260	6.6%
Residential care	120	3.0%
Other facility	878	22.3%
N/R	22	0.6%

Note: f: Frequency, and %: percent.

Approximately 17.0% of participants were between the ages of 18–34, and 12.5% were 65 years of age or older. Regarding years of professional experience, 48.3% (1,903) of participants had over 20 years of experience, 21.3% had between 11 to 20 years experience, 15.0% had between 6 to 10 years experience, and 14.4% had less than 6 years experience. Overwhelmingly, 85.1% of participants practice in suburban or urban locations while only 10.9% practice in rural areas. The primary practice setting for these participants were non-teaching hospitals (17.6%), private practice (16.5%), teaching hospitals (15.5%), or outpatient clinics (13.9%).

Procedures

This study was a cross-sectional survey. Participants' contact information was gathered from the Florida Department of Health Healthcare Practitioner Data Portal. Participants were sent an initial email and 1 follow-up email, 8 weeks apart. Health professionals completed the survey online via Qualtrics Online Software™ between November 2017 to March 2018. There was no cost associated with using the email listserv or sending out the survey on Qualtrics™. Participation in the survey was entirely optional and was at the discretion of each receiving the survey.

Data Analysis

All data summaries and statistical analyses were performed using the SAS software version 9.4. (SAS Institute Inc, 2013). Descriptive Statistics (frequency counts and percentages) were used to summarize health professionals' survey responses, as well as the demographics of the survey respondents, including gender, age group, credential group, and years of experience.

The binary responses (Yes/No) were reported from 3,940 survey respondents on all five accomplished competencies: provide patient-centered care, work in an interdisciplinary team, employ evidence-based practice, apply quality improvement, and utilize informatics. The proportion of positive response (“Yes”) was analyzed simultaneously using a generalized linear mixed model with a binary distribution and logit link function, and a simulation-based approach was used to adjust the confidence intervals to account for the assessment of multiple endpoints. A comprehensive model was analyzed first to determine the model fit and examine variable multi-collinearity. The compressive model included competency, gender, age group, credentials group, years of experience, location of practice, and the three-way interaction between competency, profession, and age or years of experience. The three-way interaction terms, age group by profession by competency and years of

experience by profession by competency, were found to not be significant, indicating that the comparisons among different age groups or years of experience can be made for the overall participants' population. The model included competency, gender, age group, credential group, years of experience, location of the practice, and all two-way interactions between competency and each of the other factors as fixed effects. A heterogeneous compound symmetry covariance structure was selected to model the correlated residual errors of the responses across different questions from the same survey participant. To address the possibility of confounding between age group and years of experience, we conducted a test of independence and found that there was a statistically significant positive correlation between age groups and years of experience, suggesting that the older the participant, the more years of experience they had. Therefore, two separate models were built to use age groups or years of experience as the main predictor. Differences, measured by the odds ratio, among age groups and years of experience groups were determined by using the least square method. For age groups, the 18–34 years group was compared against each of the other age groups. For years of experience, the ‘in training to 5 years’ group was compared against each of the other years of experience groups. Statistically, a significant difference was concluded if the lower 95% confidence limit of the odds ratio is greater than 1, or the upper 95% confidence limit of the odds ratio is less than 1.

Ethical Procedure

Approval for this study was received from the University Institutional Review Board. In accordance with the policy of the University, the research was categorized as exempt by the Institutional Review Board. Participants' confidentiality was ensured, and informed consent forms were signed by participants before taking part in this study.

Results

A total of 3,940 participants answered our survey item that asked them to indicate with a yes/no, the competencies they accomplish daily (see Table 2). The sample size of this study is sufficiently large to draw meaningful conclusions. The sample size can detect at least a 7% difference in proportions with a power of least 0.8 using a 2-sided test and a 5% type I error, assuming the allocated sample size is 1000 in each of the 4 age and experience groups. About 88% indicated that they provide patient-centered care, 62% work in an interdisciplinary team, 71% employ evidence-based practice, 53% apply quality improvement techniques and 36%

Table 2. Competencies Participants Feel They Accomplish Daily, n=3940.

Accomplished competencies	Yes		No	
	f	%	f	%
Provide patient-centered care	3478	88.3%	462	11.7%
Work in an interdisciplinary team	2428	61.6%	1512	38.4%
Employ evidence-based practice	2792	70.9%	1148	29.1%
Apply quality improvement	2090	53.0%	1850	47.0%
Utilize informatics	1411	35.8%	2529	64.2%

Note: f: Frequency, and %: percent.

Table 3. Least Square Mean Difference of Competencies and Age Group and Years of Experience.

	Age groups		
	18–34 vs 35–54 OR (95 %CI)	18–34 vs 55–64 OR (95 %CI)	18–34 vs 65+ OR (95 %CI)
Provide patient-centered care	2.22* [1.28, 3.88]	1.90* [1.11, 3.25]	2.45* [1.30, 4.62]
Work in an interdisciplinary team	1.54* [1.13, 2.11]	1.63* [1.21, 2.19]	2.18* [1.50, 3.17]
Employ evidence-based practice	1.56* [1.12, 2.18]	1.57* [1.15, 2.16]	0.35* [0.24, 0.51]
Apply quality improvement	1.20 [0.90, 1.59]	1.51* [1.04, 2.20]	1.58* [1.10, 2.28]
Utilize informatics	1.16 [0.86, 1.56]	1.15 [0.87, 1.52]	1.38 [0.95, 2.01]
	Years of experience		
	In training to 5 years vs 6–10 years	In training to 5 years vs 11–20 years	In training to 5 years vs 21 years +
Provide patient-centered care	0.65 [0.34, 1.27]	1.41 [0.87, 2.27]	1.25 [0.73, 2.13]
Work in interdisciplinary team	0.75 [0.52, 1.08]	1.01 [0.76, 1.35]	1.11 [0.80, 1.53]
Employ evidence-based practice	0.84 [0.57, 1.26]	1.34 [0.98, 1.83]	0.48* [0.35, 0.66]
Apply quality improvement	0.87 [0.62, 1.22]	1.83* [1.25, 2.67]	1.97* [1.43, 2.70]
Utilize informatics	0.95 [0.66, 1.35]	1.02 [0.77, 1.37]	1.05 [0.75, 1.46]

Note: OR: Odds Ratio, CI: Confident Interval, *p<0.05.

utilize informatics. The majority of participants did indicate they do not utilize informatics (64%).

Our Table 3 highlights the least square mean difference of odds ratios among age groups and years of experience groups for each of the competency items. We found that 18–34 year-old health professionals are 2.22, 1.90, and 2.45 times more likely to provide patient-centered care than 35–54, 55–64, and 65+ counterparts. In addition, those 18–34 year-old health professionals were also 1.54, 1.63, and 2.18 more likely to work in an interdisciplinary team than 35–54, 55–64, and 65+ counterparts. Furthermore, those 18–34 year-old health professionals were also 1.51, and 1.58 more likely to apply quality improvement techniques than 55–64, and 65+ counterparts. However, when comparing 18–34 to 55–65 year-old health professionals, we also found that the 18–34 age group were 1.56 and 1.57 times more likely to employ evidence-based practice than 18–34, and 55–64 counterparts but were 65% less likely than health professionals 65 years of age or older. When we

examined participants’ utilization of health informatics, we found no statistically significant difference.

When comparing years of experience, we found that participants with 0–5 years of experience were 1.83 and 1.97 times more likely to apply quality improvement techniques than those with 11–20 and 21 and more years of experience and were similar to those with 6–10 years of experience. However, they were 52% less likely to employ evidence-based practice than those with 21 and more years of experience.

Discussion

This study shows that younger health professionals are more likely to consistently practice daily competencies than their older counterparts 65 years and older, especially in the use of evidence-based practice (EBP), using informatics, and working in interdisciplinary teams, consistent with our hypothesis. Although age positively correlated with years of experience, it was evident that age

had a greater, and more significant impact on these competency practices. These findings have been consistent among several prior studies, especially those with a focus on nurses of various specialties, considering nurses made up the largest number of participants in this study at 47.4%. A cross-sectional study in the U.S. found that younger nurses score higher in evidence-based practice competencies and daily utilization. The study also suggests that more education leads to higher daily use of EBP competencies, rather than more years of experience (Melnik et al., 2018). Yet, our study found that those with 0–5 years of experience were 52% less likely to use EBP when compared to those with 21 more years of experience. This suggests that current evidence-based practices are learned by recent graduates, yet the increased experience is one of the only ways to truly implement EBP for daily use.

Similarly, it has been found that medical students over the age of 18 reported valuing EBP more than their senior supervisors, yet both age groups appeared to utilize EBP similarly when assessed (Vidarthi et al., 2015). Our study presented significant findings regarding the use of health informatics, where a total of 35.8% of respondents said to utilize informatics with increasing usage the younger the respondent. Health informatics is being taught more in nursing, medical, and health-related programs, which could explain why 18–34 year-olds were significantly more likely to utilize this technology (Tubaishat et al., 2016). The use of health informatics can encompass the use of computer skills, electronic medical records (EMR), and hospital information systems (Khezri & Abdekhoda, 2019). While not every health professional acknowledges the need for daily utilization of health informatics, many unknowingly use HI as part of a facility's EMR system. Moreover, there are staff members and case managers who are often responsible for tracking informatics and monitoring quality improvement projects, reducing the burden for practicing health professionals. Despite health professionals, 65 years and over-reporting lower use of health informatics, basic computer system skills and informatics use can be taught through training (Ali et al., 2018; Clauson et al., 2017; Haber, 2019; Hersh et al., 2017; Williams et al., 2019). One recent study found that computer skills training is not offered often, specifically, older nursing staff reported that they felt there were significant barriers for senior staff to partake in e-training and that there was interest to learn but few opportunities extended (Ali et al., 2018). Physicians from a survey study conducted in an acute care hospital reported that 44% of physicians responded that they have no computer software-related skills. The study found that junior physicians scored higher than senior physicians in health informatics usage in this study, yet senior physicians reported stronger

competencies in this topic (Devitt & Murphy, 2004). This can be attributed to the lack of training offered to senior staff, which could mean that decreased health informatic utilization amongst senior staff could be more apparent due to the assumption that staff is keeping up with health information technology trends on their own time.

Regarding interdisciplinary teams, our study shows that younger health professionals were 2.18 times more likely to work in collaborative teams than their 65+ counterparts. This finding is consistent with a study following nurse and physician collaboration within an English hospital, finding that age, not years of experience, made the difference when it came down to who worked best in a team setting (Knorrning et al., 2019). The study found that younger health professionals worked better in teams and reported a 7% decrease in misinformation given to patients (Knorrning et al., 2019). This indicates that young health professionals partaking in teamwork daily can provide more consistent care to their patients. An observational study of acute care U.S. hospitals found that older, more experienced physicians had a higher patient mortality rate than their younger counterparts (Tsugawa et al., 2017). This finding suggests that age and years of experience have a direct impact on patient outcomes, and more may not necessarily be better (Bakker et al., 2000). Furthermore, a 2017 article published in *Circulation: Cardiovascular Quality and Outcomes* highlighted the importance of both age and experience among surgeons as it related to congenital heart surgery outcomes. The study found that both age and years of experience (fellowship) and years since graduation were highly correlated, however, the article included all three elements as the found that age played a role in surgeons patient volume (Anderson et al., 2017). Other nursing and health professional studies highlighted the impotence of both age and years of experience in examining burnout (Patrick & Lavery, 2007), stress (Laal & Aliramaie, 2010), and quality care (Hill, 2010).

Another interesting finding in the study is related to increased age having a lower use of patient-centered care. Health professionals who ensure that their patients are active participants in their care have been found to score higher in team-based collaboration. Furthermore, the growing trend that began in the mid-1990s of health care practices using salaried and employed-physician as part of a large organization has increased reliance on team-based collaboration (Kash & Tan, 2016). Researchers have found that there is a positive correlation between patients feeling involved in their care and nurses working better in interdisciplinary teams (Hwang et al., 2019). Suggesting that younger health professionals who work with their colleagues at work are more

likely to work with their patients daily as well (Rothenberger, 2017).

Lastly, there are a limited number of articles that look at health professions as a whole encompassing both competency and literacy. We recognize that our discussion looks within a particular subset of professions, yet these professions display consistencies across. All these professions have shared core values, knowledge, and skilled despite that they receive training in isolation (Engum & Jeffries, 2012). For example, both age and professional years of experience has been shown to impact health professionals' performance and competency and has been documented across all health professions, and in particular, it is evident among physicians, nurses, and social workers (Chau & Hu, 2002; Courtney et al., 2000; Robb et al., 2002).

Strengths and Limitations

Several limitations need to be addressed in this study. This survey was distributed in an email with an external link to the Qualtrics survey. Due to the fact that most organizations have safety and security protocols to encourage employees to not click on external links, plus there was no incentive to participate in this survey, the response rate was less than 1% of all healthcare providers. Although the summary of demographics shows the sample covers different genders, professions as well as years of experience, the nonresponse bias may still exist in this convenience sample. The survey also did not include information about an individual's race or ethnicity, and we were unable to account for that in our analysis, however, were controlled for factors that impact experience and practice which include practice setting, gender, credential group, age, years' experience and location of practice (urban/rural). Additionally, the providers included in this survey were only located in Florida, so further research needs to include professionals from around the United States to determine if our results are generalizable to the larger healthcare population.

Implications for Practice

Despite these limitations, this study supports the finding that younger health professionals are more likely to utilize key competencies daily than their older counterparts, especially in areas of health informatics, evidence-based practice, and quality improvement. The study also supports a positive correlation between patient-centered care and interdisciplinary teamwork capability, indicating that a focus on job performance has a stronger outcome for overall patient experience. To our knowledge, this study is the first study to provide a comprehensive look at competencies across age and years of experience.

It presents findings for daily utilization of health informatics, evidence-based practice, patient-centered care, quality improvement, and interdisciplinary team collaboration. Of all these findings from the study, patient-centered care and working in interdisciplinary teams were the two most utilized daily competencies. The current practice setting has strong demands for interprofessional teamwork and health policies at the state and federal level have pushed for patient-centered care. This means that both patient-centered care and interdisciplinary teamwork are important for health professionals in their daily work and provide substantial benefit.

Conclusion

Practices across all health professions should focus on expanding the use of these competencies to improve performance. Additional training and mentorship might be needed to improve health providers' utilization of evidence-based practice, quality improvement, and health informatics (Hunt et al., 2018). These additional training should be tailored to the providers' experience and age to improve effectiveness and in turn increase use.

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ORCID iDs

Kristen Hicks-Roof  <https://orcid.org/0000-0001-7713-3037>

Chloe E. Bailey  <https://orcid.org/0000-0002-9306-1843>

Hanadi Y. Hamadi  <https://orcid.org/0000-0001-9050-7267>

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