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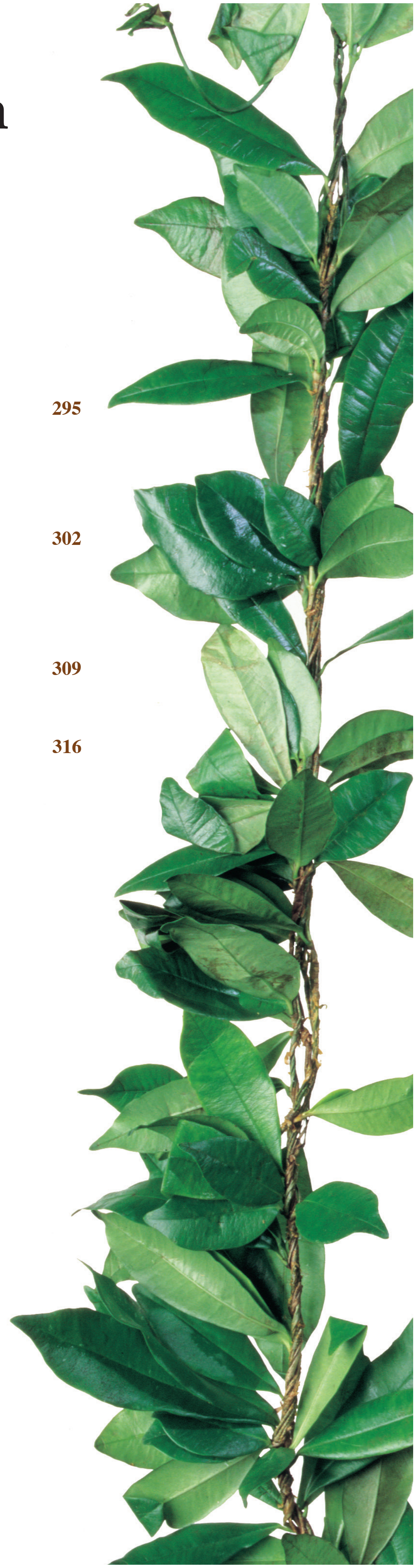

Hawaiʻi Journal of Health & Social Welfare

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Aim:

The aim of the Hawaiʻi Journal of Health & Social Welfare is to advance knowledge about health and social welfare, with a focus on the diverse peoples and unique environments of Hawaiʻi and the Pacific region.

History:

In 1941, a journal then called The Hawaiʻi Medical Journal was founded by the Hawaiʻi Medical Association (HMA). The HMA had been incorporated in 1856 under the Hawaiian monarchy. In 2008, a separate journal called the Hawaiʻi Journal of Public Health was established by a collaborative effort between the Hawaiʻi State Department of Health and the University of Hawaiʻi at Mānoa Office of Public Health Studies. In 2012, these two journals merged to form the Hawaiʻi Journal of Medicine & Public Health, and this journal continued to be supported by the Hawaiʻi State Department of Health and the John A. Burns School of Medicine.

In 2018, the number of partners providing financial backing for the journal expanded, and to reflect this expansion the name of the journal was changed in 2019 to the Hawaiʻi Journal of Health & Social Welfare. The lead academic partners are now the six units of the UH College of Health Sciences and Social Welfare, including the John A. Burns School of Medicine, UH Public Health, the Thompson School of Social Work & Public Health, the Nancy Atmospera-Walch School of Nursing, the UH Cancer Center, and the Daniel K. Inouye College of Pharmacy. Other partners are the Hawaiʻi State Department of Health and the UH Office of the Vice Chancellor for Research. The journal is fiscally managed by University Health Partners of Hawaiʻi.

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Medical School Faculty and Staff Well-being in Fall 2020 during the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic increased stress and worry among faculty and staff members at universities across the US. To assess the well-being of university faculty and staff, a survey was administered at a medical school in the state of Hawai'i during early fall 2020. The purpose of the exploratory study was to assess and gauge faculty and staff members' well-being regarding the school's response to COVID-19. Participants in this study represented a convenience sample of compensated teaching, research, and administrative faculty and staff members. A total of 80 faculty and 73 staff members participated. Overall, faculty and staff reported relatively low levels of worries and stress. Staff members reported greater levels of worry and stress than faculty members in 8 of the 11 questions. Statistical differences were detected in 3 questions, with staff reporting higher levels of worry and stress in their health and well-being of themselves ($P < .001$), paying bills ($P < .001$), and losing their jobs ($P < .001$). Both faculty and staff reported good overall satisfaction on the timeliness and clarity of messages that they received, support from leadership and the school, and support to adjust to changes in response to COVID-19. For both faculty and staff, the greatest worry or concern for the open-ended question on worry and stress was related to financial and economic issues. Data from this survey and can contribute to an understanding of medical school employee well-being during a major operational disruption and may help develop policies and programs to assist employees in different employment categories during future disruptions.

Abbreviations

COVID-19 = coronavirus disease 2019
HI-EMA=Hawai'i Emergency Management Agency
JABSOM = John A. Burns School of Medicine
SARS-CoV-2 = severe acute respiratory syndrome coronavirus 2
UH = University of Hawai'i

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has had a profound effect on universities, impacting how education, research, and administration are conducted. Although each institution may have experienced different challenges and obstacles, the pandemic has impacted universities worldwide. Social distancing and shelter–in-place mandates forced the cancellation of events, gatherings, and in-person courses and meetings, requiring all to adopt and learn new ways to work, teach, and balance work-home activities. As a community-based medical school, the John A. Burns School of Medicine (JABSOM) dealt with additional challenges, as medical students not only have courses on campus but clerkships and electives which take place in non-university community clinics and hospitals, thus adding an additional layer of pandemic challenges. This report summarizes the JABSOM response to the COVID-19 pandemic and shares the results of a JABSOM workforce well-being survey taken in the early stages of the COVID-19 pandemic.

As the pandemic initially emerged, the first communication from the University of Hawai'i (UH) President was sent out on February 27th, 2020, and addressed concerns and preparations for a possible COVID-19 outbreak in the state of Hawai'i. Travel advisories and Centers for Disease Control and Prevention guidelines were outlined during that time of uncertainty. Two weeks later, on March 12th, the UH President announced profound operational changes due to the virus: all courses would be conducted online after the spring break (starting March 23rd), all events with more than 100 individuals were suspended, and no new non-essential travel would be allowed. On March 20th, all 10 campuses of the UH system were closed to the public, and guidelines were developed for a work-at-home policy.[1] Starting on March 23rd, the governor of Hawai'i enacted a shelter-in-place order where all non-essential individuals were required to telework and remain in the home, except for essential activities.[2] By July, over 1000 confirmed cases of COVID-19 were identified throughout the state, and they were no longer confined to particular clusters, which confirmed community spread was occurring and was a greater concern than travel-related spread.[3] Subsequently, several COVID-19 updates were sent to the UH community extending the mandate to conduct all courses online through summer 2020 and later through the 2020-2021 academic year.

At the medical school, all undergraduate and graduate courses complied with the UH remote learning policy. The clinical components for medical, communication sciences and disorders, and medical technology were suspended on March 16 through April 30, 2020, as preparations for alternate learning activities and experiences and online learning platforms were being prepared. Additionally, residency and fellowship programs were also being altered and/or postponed to accommodate social distancing and the shift to online learning. As learning experiences were being altered or suspended, university leadership continued to work with the accrediting organizations to ensure that curricular requirements continued to be met despite the significant shift and disruption caused by the pandemic.

On the clinical side, affiliated hospitals and clinics were preparing procedures and guidelines, which included restrictions for learners regarding the care of patients suspected or confirmed with COVID-19 and requirements for personal protective equipment, proper sanitation, and preventative measures. During the early stages of the pandemic in the summer of 2020, it is noteworthy to mention that there was no vaccine yet available. At the time of the employee survey, early fall 2020, faculty, staff, and students did not have access to the COVID-19 vaccine.[4] First doses of the Pfizer vaccine were administered to front-line health workers (including medical students and residents) in mid-December 2020. Thus, initial efforts to contain the spread of COVID-19 were focused on keeping the ill at home, mandatory face coverings, and social distancing.

In the community, the COVID-19 pandemic had exacerbated socioeconomic health disparities in the state of Hawai‘i for those with limited resources (eg, living in smaller residences with multigenerational families, doing essential service jobs in the community, and using public transportation) and constraints to lifestyle modifications, which further disproportionately affected Pacific Islander, Filipino, and Native Hawaiian populations.[5] Those employees with school-aged children encountered additional pressures as primary and secondary schools were also included in the stay-at-home order. As schools converted to remote learning, additional stress was put on families as some school districts had more resources than others to accommodate online learning, access to the internet, and other technological needs such as laptops and computer supplies. Additionally, daycare centers and afterschool programs also halted operations. These changes put an additional burden on families, especially on women. Exacerbated by the pandemic, women, compared to men, tend to have a higher proportion of household duties while also facilitating the needs of children and aging family members, which can result in a greater negative impact on work and higher levels of worry and stress.[6-9]

To assess the well-being of the medical school's faculty and staff, a survey was administered during early fall 2020, approximately 5 months into the pandemic. The purpose of this exploratory study was to gauge the stress and worries caused by the pandemic, as well as to obtain feedback on how JABSOM's faculty and staff handled recent service changes and what the medical school could do to further support the employees. Results compare faculty members and staff members, as these job classifications are very different in nature. A faculty member position tends to be focused on academic programs, for example, teachers, researchers, and librarians. The work of a faculty member also tends to be autonomous and evaluated for productivity in areas such as research and scholarship, service (university, professional, and/or public), and professional activities. Whereas staff members are primarily in support roles under the direct guidance of academic or administrative leaders. They tend to have regular hours and job tasks, such as support for fiscal/accounting, personnel management, information technology, or academic program tasks. Staff members are typically evaluated by criteria according to their job descriptions and established expectations by the person to whom they directly report. Thus, data from this survey and report can contribute to an understanding of medical school employee responses related to a major operational disruption by employee category. Understanding any differences between faculty and staff member responses can also help guide messaging and particular policies and procedures specific to these groups.

Methods

Participants in this study represented a convenience sample of JABSOM compensated teaching, research, and administrative faculty and staff members. Recruitment was conducted electronically by email, general school announcements, and presentations at faculty and staff meetings. No incentive was offered. The faculty and staff surveys were voluntary, self-administered, anonymous, and available via a website over the internet for 6 weeks, closing on October 31, 2020. Faculty and staff member categories were self-identified according to their university appointment. University of Hawai‘i Institutional Review Board approval was obtained (protocol number 2020-00284).

A modified version of the Higher Education Data Sharing Consortium COVID-19 Institutional Response Staff and Faculty survey instruments (© 2020 Higher Education Data Sharing Consortium) was used to measure how the pandemic affected the employees' duties as faculty and staff members.[10] These surveys were created to help gauge the university's impact on its faculty and staff members in response to COVID-19. For this analysis, questions using 5-point Likert scales were categorized in 3 areas: worry and stress due to the pandemic (11 questions), experiencing lack of control in work duties (6 questions), and communication and support from the medical school (11 questions). The questions related to lack of control were adapted from the Perceived Stress Scale and Perceived Stress Questionnaire,[11] which measured the negative effects of one's sense of control at the workplace due to the pandemic. The survey also included open-ended text response questions on what was appreciated at work, causes of stress/anxiety, and future worries and concerns.

The top 2 box score approach was used, combining the two most positive Likert items for descriptive purposes. In determining differences between faculty and staff independent variables, the Mann-Whitney U test (known also as the Wilcoxon Rank Sum test) was used to compare overall distribution differences. To address type 1 error risk due to multiple comparisons, the Bonferroni correction was applied for an adjusted P value of <.002 (corrected P = .05/28). Statistical tests were 2-tailed, and data analysis was performed using IBM SPSS, version 28 (IBM Corp, Armonk, NY).

Results

A total of 80 faculty members and 73 staff members participated in the surveys. Over half the faculty and staff identified as Asian (51%), followed by White (23%), more than one race (16%), and Native Hawaiian or Pacific Islander (10%). For both faculty and staff, the majority of respondents were full-time employees (77%). Faculty member academic ranks included mostly the professor categories (30%), and staff members were predominately salaried (81%). See **Table 1** for the characteristics of survey participants.

Worries and Stress

Overall, JABSOM faculty and staff reported worries and stress as being *often* or *very often* in less than 50% of all participants for 9 out of the 11 questions in this category (**Figure 1**). Staff members generally reported greater levels of worry and stress than faculty members, with higher percentages of responses *often* or *very often* in 8 of the 11 questions. Statistical differences were detected in 3 questions, with staff reporting higher levels of worry and stress in their health and well-being of themselves ($P<.001$), paying bills ($P<.001$), and losing their jobs ($P<.001$) compared to faculty. The 2 questions that reported the highest worry levels (*often or very often*) for both faculty and staff members were the health and well-being of friends and family and worrying about one's health and well-being. See **Table 2** for details.

Experiencing a Lack of Control

Though not statistically significant, in all 3 questions related to the sense of control, there was a general trend that faculty members tended to report greater negative effects than staff for being on top of things, having too many worries, and having difficulties pile up too high to overcome. Similarly, faculty reported more negative effects than staff in all 3 questions on feeling pushed: feeling under pressure from deadlines, feeling

Table 1. Characteristics of JABSOM Survey Respondents, Fall 2020

	Faculty (n=80) No. (%)	Staff (n=73) No. (%)	Total (N=153) No. (%)
Faculty			80 (52)
Staff			73 (48)
Gender			
Male	37 (46)	22 (30)	59 (39)
Female	43 (54)	50 (69)	93 (61)
Non-binary[a]	0	1 (1)	1 (1)
Race identified			
American Indian or Alaska Native	1 (1)	0	1 (1)
Asian	35 (44)	43 (58.9)	78 (51)
Native Hawaiian or Pacific Islander	8 (10)	7 (9.6)	15 (10)
White	23 (29)	12 (1.4)	35 (23)
More than one race	13 (16)	11 (15.1)	24 (16)
Employment			
Part-time	28 (35)	7 (9.6)	35 (23)
Full-time	52 (65)	66 (90.4)	118 (77)
Academic Rank (faculty only)			
Professor	24 (30)		24 (16)
Associate Professor	19 (24)		19 (12)
Assistant Professor	25 (31)		25 (16)
Researcher	3 (4)		3 (2)
Specialist	5 (6)		5 (3)
Instructor	4 (5)		4 (3)
Employment Category (staff only)			
Hourly (non-exempt) without responsibility for supervising staff		13 (18)	13 (9)
Hourly (non-exempt) with responsibility for supervising staff		1 (1)	1 (1)
Salaried (exempt) without responsibility for supervising staff		43 (59)	43 (28)
Salaried (exempt) with responsibility for supervising staff		16 (22)	16 (11)

[a] Non-binary refers to the self-reported sexual identity of the survey respondent.

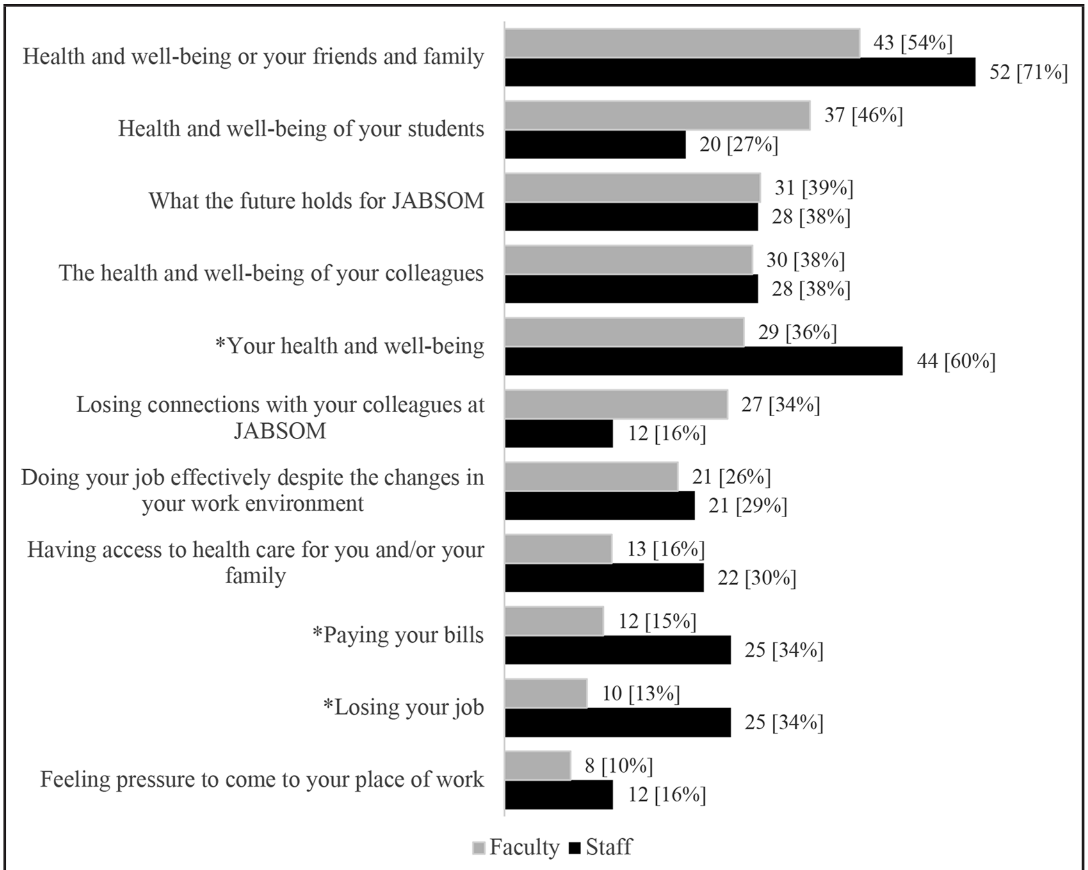

Figure 1. Faculty and Staff Reporting Often or Very Often for Questions on Stress and Worry[a]

[a] (n=80 faculty, n=73 staff)

* Asterisk notes statistically significant differences (*P* < .001)

Table 2. Faculty and Staff Member Worry and Stress Comparison Using the Mann-Whitney's U Test

	Faculty (n=80)		Staff (n=73)		U	Z	P (two-tailed)
	Median	Mean (SD)	Median	Mean (SD)			
Worry and Stress **1 - Never | 2 - Almost Never | 3 - Sometimes | 4 - Often | 5 - Very often**							
Given the changes caused by the spread of COVID-19:							
How often do you worry about your health and well-being?	3	3.10 (1.109)	4	3.75 (1.115)	1973.500	-3.569	< .0001
How often do you worry about paying your bills?	2	2.18 (1.220)	3	3.10 (1.345)	1776.000	-4.293	< .0001
How often do you worry about losing your job?	2	2.26 (1.076)	3	3.07 (1.305)	1916.500	-3.773	< .0001
How often do you worry about the health and well-being of your friends and family?	4	3.46 (1.169)	4	3.99 (1.124)	2139.000	-2.961	.003*

* Bonferroni correction was applied for an adjusted significance level *P* value of <.002

in a hurry, and having too many things to do. Overall, less than half of both faculty and staff members reported negatively in all questions on lack of control. See **Figure 2** for details.

Communication and Support

Though there was no statistical difference between faculty and staff on questions regarding communication support, both faculty and staff reported good overall satisfaction, with the majority reporting *satisfied or very satisfied* with the timeliness and clarity of messages that they received in response to COVID-19. Similarly, the majority of faculty and staff members reported being *generally satisfied or very satisfied* with support from JABSOM leadership showing concern and support to adjust to changes. See **Figure 3** for details.

Open-ended Responses Related to Stress and Worry – Faculty and Staff

In response to the open-ended question, "What are your biggest worries or concerns (eg, administrative, educational, research) as you think about what's coming up in the next few months?" the most common response theme was related to financial and economic issues. Twenty-nine faculty member responses included financial budget-related worries: furlough/pay cuts, administrative budget reductions, reduced staffing/layoffs, re-

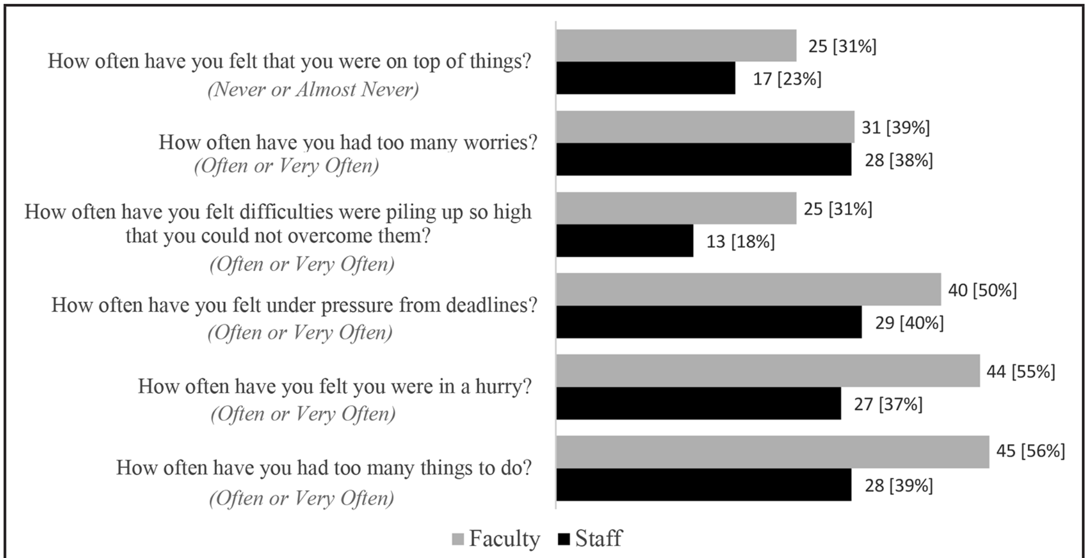

Figure 2. Faculty and Staff Questions on Experiencing Lack of Control[a]

[a] (n=80 faculty, n=73 staff)

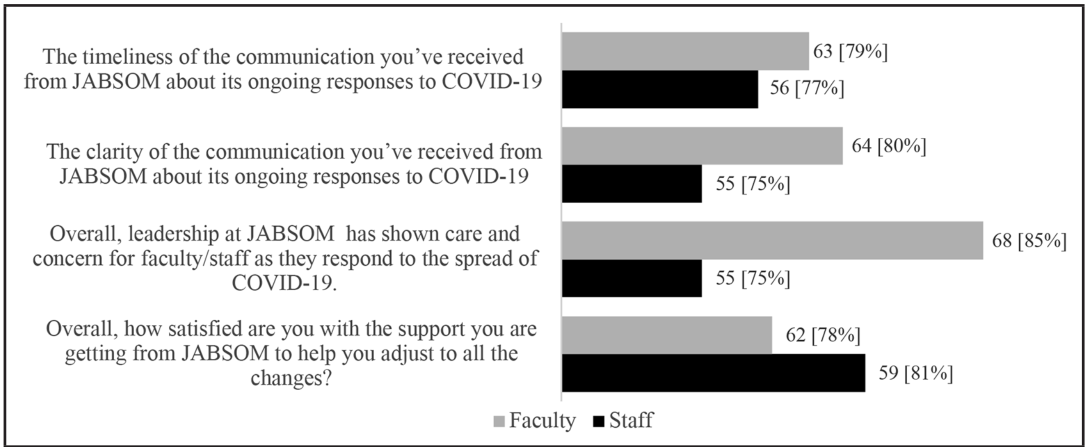

Figure 3. Faculty and Staff Reporting Generally Satisfied or Very Satisfied for Questions on Communication Support[a]

[a] (n=80 faculty, n=73 staff)

duced research funding, and budget issues with the state. The second most common theme for faculty members, 22 responses, related to worries regarding the impact that COVID-19 has on education.

Similarly, the most common theme in staff responses to the same question was also related to economic/financial issues. Thirty participants mentioned concerns regarding pay cuts, job security, furloughs, funding issues, and budget cuts. The second most common theme, 20 staff comments, was related to health and well-being due to infections and the spread of COVID-19: concerns about exposure to the virus, health and well-being of family if they become infected, and work disruptions caused by virus infections. The third theme with 10 staff member responses related to working at home and returning physically back to work.

Discussion

Due to pandemic challenges, as compared to other questions related to worries and stresses, employees reported higher concerns regarding the health and well-being of family and friends and the health and well-being of themselves. When comparing the responses between faculty and staff, significant differences were detected. Staff members reported proportionately higher worries that were personal or related to their health and well-being of themselves, paying bills, and losing their jobs. Though no statistical difference was detected, a higher percentage of faculty members reported that they felt less sense of control and had feelings of being pushed with job responsibilities compared to staff members in all questions. Over one-third of faculty respondents reported feeling less sense of control in the workplace, and 50% or more reported feeling pushed or under pressure with work duties due to the pandemic. These differences may be attributed to the nature of the positions.

Faculty members in general have more autonomy in the work structure. Additionally, part-time clinical faculty members may have outside medical practice responsibilities. Faculty-level work tends to be conducted independently regarding teaching, research, and administrative duties. Nonetheless, restrictions on clinical practice during the survey period may have increased worries and stress for clinical faculty members regarding their financial situation. Staff respondents were mostly full-time and in nonsupervisory roles, ie, under the direction of a supervisor. Staff respondents may have reported more personal and financial related stress due to fewer options if they were to lose their job. It has been reported that faculty members have demonstrated greater job satisfaction with greater autonomy; in contrast, staff members associate job satisfaction with their perceived level of supervisory support.[13] Thus, there may be uncertainty for staff members working at home since supervision of work may be difficult to conduct remotely, and staff evaluations are primarily based on the performance of administrative tasks, whereas faculty evaluations are on teaching, scholarly activities, and community engagement. Staff in nonsupervisory roles may also be in earlier stages of their career, adding more to uncertainty and job insecurity. There is a relationship between job insecurity and financial worry, and the greater the job insecurity, the higher the anxiety level.[14,15] The finding that faculty members had less worry about their health may be due to a greater comfort level working with health threats and a better grasp on the true COVID-19 health risks that existed in the community.

Despite the worries and stress caused by COVID-19, both faculty and staff members at JABSOM reported overall good satisfaction with communication, information received, and support from leadership, with over 75% responding positively (*generally satisfied or very satisfied)*. When stressed, information and knowledge of situations through effective communication can bring a sense of control and help alleviate uncertainty and stress.[16] In efforts to facilitate communication, leadership from both the medical school and the parent university made great efforts to communicate often and clearly. Employees and students at JABSOM participated in town halls and received weekly messages via email (from March 2020 through July 2021), which were also posted on both the parent university and the medical school's websites. The information included the status of the pandemic and institutional, as well as statewide operational changes. As the only medical school in the state of Hawai‘i, senior leadership was deeply involved with the Hawai‘i State Department of Health's COVID-19 response, which included participation in the Hawai‘i Emergency Management Agency (HI-EMA) Community Care Unit that was reactivated due to the pandemic. Additionally, the JABSOM Office of Medical Education Director served part-time as the Infectious Disease Officer for the City and County of Honolulu throughout the pandemic. Thus, information from the city and state was funneled directly to the medical school. When faculty and staff were asked what they appreciated most about JABSOM's COVID-19 response in open-ended questions, themes included timely information, email updates, online resources, and confidence in leadership.

Limitations

Generally, well-being surveys of this nature tend to be completed more often by employees with operational or support concerns. There may also have been a selection bias as recruitment was conducted via email and during faculty and staff meetings, which may have reached more full-time employees. This study examined the well-being of faculty and staff members at the school of medicine; future research may include students to give a more complete picture of the institution's response to COVID-19.

Conclusion

The COVID-19 pandemic has forced changes in educational and administrative methods, medical education curricula, and clinical practice. Such rapid change can cause additional worry and stress. As the pandemic lingered on through summer 2021 and cases started to increase due to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Delta variant, UH rescinded the planned employee return-to-campus announcement. However, all campus facilities were to be open for the fall semester 2021. Thus schools, departments, and programs within the UH System were to ensure that employee staffing was present on campus to facilitate normal operations.[1] As the fall 2021 semester prepared to start with in-person classes, a UH policy was established that required all employees and students to be fully vaccinated or to have a validated negative COVID-19 test (negative result valid for 3-7 days depending on the type of test), before entering a university site.[1]

Potential solutions to help alleviate worry and stress for faculty and staff members may include continued opportunities to work remotely from home and flexibility in work schedule. Thus, developing more centralized instructional design programs facilitating blended learning, face-to-face, and remote/online learning methods, with a standardized approach may help faculty, staff, and students to better and more quickly adjust to remote learning activities in the event of future major disruptions.[7,17,18] Moreover, better understanding, and acknowledgement by supervisors of employee work-home life challenges may help mitigate employee stress and worry.[5]

In addition to institutional policies, strategies and resources are also needed to address mental health; universities must develop clear policies on support options.[7] Communication methods must be intentional, direct, and in a single voice to avoid over-communication and misinformation.[19] Training in stress management, crisis management, open communication, and supportive culture can help alleviate workplace stress.[16,17,19] Due to the rapidly changing nature of COVID-19, leadership communication and transparency are vital, keeping both faculty, staff, and students aware of the status of events and changes and allowing for questions and timely feedback. Leadership approaches should demonstrate flexibility and responsiveness, acknowledgment of employee and student vulnerabilities, and vigilance in infection control in the workplace.[18,20] Moving forward, lessons learned from the COVID-19 pandemic can contribute to a more robust and flexible educational process that would help the university community to better adjust and implement change in response to possible future disruptions.

Conflict of Interest

None of the authors identify any conflict of interest.

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Increasing Medical Students' Confidence in Delivering Bad News Using Different Teaching Modalities

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Abstract

Opportunities to learn how to deliver bad news and practice this important skill are limited in most medical school programs. To address this gap, an integrated curriculum was created for first-year medical students at the University of Hawai'i John A. Burns School of Medicine that used a problem-based learning case, a didactic session, and a simulated patient experience to teach students how to deliver bad news using the 6-step SPIKES protocol. Students' competency was evaluated using a video-recorded simulated patient encounter. Students also completed a post-experience questionnaire to assess their confidence in delivering bad news before and after the simulation as well as the perceived benefit of different teaching modalities. A sample of 60 students completed an average of 16/17 (94%) tasks on the 17-item SPIKES checklist. Students' confidence in delivering bad news improved from 32% to 91%, before and after the educational experience. The majority of students agreed or strongly agreed that the simulated patient encounter helped them learn how to deliver bad news (96%), felt that the presentation prepared them to deliver bad news (87%), and expressed desire to have more simulated patient experiences in the future (87%). Overall, this curricular improvement project showed that students had a positive perception of the different teaching modalities, increased confidence at delivering bad news following the simulated patient encounter, and a preference for more simulated patient encounters linked to problem-based learning cases in the future.

Keywords

Delivering Bad News, SPIKES Protocol, Communication Skills, Medical Education

Abbreviations and Acronyms

JABSOM = John A. Burns School of Medicine
PBL = Problem-Based Learning
SPIKES = acronym for a protocol for delivering bad news that includes Setting, Perception, Invitation, Knowledge, Empathy, Strategy/Summary

Introduction

Delivering bad news is an important skill that physicians must possess to effectively communicate with their patients. Bad news has been defined by Buckman et al as "any news which adversely and seriously affects an individual's view of his or her future."[1] The process of breaking bad news reflects a critical moment that can strengthen or weaken the relationship between a physician and a patient.[2,3] If bad news is delivered poorly, it can adversely affect the patient and lead to more stress, misunderstanding, and poor health outcomes.[3-6] For physicians, stress related to delivering bad news can contribute to anxiety and burnout.[6]

Although physicians deliver bad news to patients on a regular basis, many feel uncomfortable and unprepared for this type of encounter.[7-9] Early training in this area during medical school may help to adequately prepare future physicians for these patient interactions. Several studies have analyzed the utility of various formal training modalities (lectures, small group discussions, role-play, and simulated patient experiences) on enhancing bad news delivery skills of medical students and residents.[2,4,9-11] These studies used the 6-step SPIKES protocol, which offers an approach to delivering bad news. The name "SPIKES" describes the consecutive steps that one can follow to deliver bad news. The letter S represents "setting," which is the preparation for the discussion. The next 2 letters, P for "perception" and I for "invitation," determine how much the patient knows and to gauge their readiness to receive the news. K for "knowledge" represents the information shared with the patient regarding their situation. E for "empathy" describes the individual's ability to connect and respond to the patient's emotions. Lastly, S for "strategy/summary" determines if the patient understands their medical situation and the next steps moving forward.[2,6,12]

Prior to this project, medical students at the University of Hawai'i John A. Burns School of Medicine (JABSOM) learned how to deliver bad news during their preclinical years through a recommended learning topic which students researched and briefly discussed with their problem-based learning (PBL) groups. In this curriculum, the authors used different modalities to provide hands-on experience using a problem-based learning case, a didactic session, and a simulated patient experience to teach medical students how to deliver bad news. The aims of this project were to assess students' perception of different modalities in teaching this communication skill using the SPIKES protocol and to evaluate the effect of a simulated patient experience on students' confidence in delivering bad news.

Methods

First-year medical students (N=78) at JABSOM participated in an integrated learning experience on delivering bad news to patients, which was incorporated into their pre-clerkship curriculum during the 2019-2020 academic year. All 78 first-year medical students completed a 3-hour PBL case with faculty tutors, which involved informing an elderly woman of her diagnosis of lung cancer. The entire class then attended a 1-hour didactic session 4 days later led by the authors, which discussed the different aspects of the SPIKES protocol with integrated role-play.

Out of 78 students, 76 students participated in a 7-minute video-recorded simulated patient experience to practice delivering bad news to a patient using the SPIKES protocol 5 days after the didactic session. Two students were absent on the day of the simulated experience and were not included in data collection. There were 5 simulated patients in total, who were all volunteers from the community and did not receive any monetary compensation. In the week prior to the simulation, the authors met with the volunteer simulated patients for a brief orientation, where they received a handout describing the PBL case with a character description of the simulated patient and observed a modeled example of the patient encounter.

Out of the 76 students, 72 students consented to the video-recorded simulation. Twelve of these students were unable to be evaluated due to technological difficulties. Therefore, 60 students performed the simulated patient encounter, were evaluated using the SPIKES checklist, and completed the post-experience questionnaire. Each student received their scored SPIKES checklist for their encounter in their mailbox at JABSOM after they completed their end of unit exam. The students did not view their recordings.

The video recordings were reviewed by 5 second-year medical students, which included the first 3 authors. The authors taught the other second-year medical students to evaluate the participants using a 17-item checklist (**Figure 1**). This checklist was adopted from a previous study and modified based on the steps of the SPIKES protocol but has not been formally validated.[4] Each participant's recording was observed by 1 second-year medical student evaluator. For each of the 17 tasks on the SPIKES checklist , the evaluators marked "Yes" if the task was observed during the encounter. If the task was not observed during the encounter, the evaluators marked "No."

For each checklist item (eg, "sits down during the interview," demonstrated as numbers 1-17 on **Table 1**), the percentage was calculated using the number of students who completed the task divided by the student cohort (N = 60). These percentages were then averaged among each step of the checklist (eg, "setting," demonstrated as letters A-F on **Table 1**). The average total number of tasks completed was calculated using the cohort's overall number of tasks completed divided by the number of participants in the cohort.

A. Setting	Yes	No
1. Sits down during the interview		
2. Establishes rapport with the patient		
3. Non-verbal signaling connection to patient (eg, eye contact, proximity to the patient, appropriate physical contact)		
4. Limits interruptions		
B. Perception	**Yes**	**No**
5. Checks what the patient has been told/knows about their medical situation so far		
6. Checks and addresses patient's current feelings		
C. Invitation	**Yes**	**No**
7. Checks patient's readiness to receive the results; how much and in what detail the patient prefers		
8. Provides forewarning to news that is about to be delivered		
D. Knowledge	**Yes**	**No**
9. Expresses personal regrets		
10. Uses clear non-medical language		
11. Speaks slowly and occasionally pauses to allow patients to comprehend the information		
E. Empathy	**Yes**	**No**
12. Provides opportunity for patient to express their emotions		
13. Appropriately responds to patient's reactions and feelings		
F. Summary/Strategy	**Yes**	**No**
14. Asks about patient's readiness to proceed with plan		
15. Provides a follow-up plan		
16. Ask patient to briefly summarize their understanding of their medical situation and future direction		
17. Ask patient if they need any clarification on any information that was discussed in this visit		

Figure 1. SPIKES Checklist for Simulated Patient Experience in First-Year Medical Students, JABSOM Class of 2023

Table 1. SPIKES Checklist Results from the Simulated Patient Experience in Delivering Bad News among First-Year Medical Students (JABSOM Class of 2023)	
SPIKES Checklist	**Average Score % of participants (N = 60)**
A. Setting	**100%**
1. Sits down during the interview	100% (60/60)
2. Establishes rapport with the patient	100% (60/60)
3. Non-verbal signaling connection to patient	100% (60/60)
4. Limits interruptions	100% (60/60)
B. Perception	**97%**
5. Checks what the patient knows about their medical situation so far	98% (59/60)
6. Checks and addresses patient's current feelings	95% (57/60)
C. Invitation	**96%**
7. Checks patient's readiness to receive the results; detail the patient prefers	92% (55/60)
8. Provides forewarning to news that is about to be delivered	100% (60/60)
D. Knowledge	**98%**
9. Expresses personal regrets	100% (60/60)
10. Uses clear non-medical language	95% (57/60)
11. Speaks slowly and pauses to allow patients to comprehend the information	100% (60/60)
E. Empathy	**99%**
12. Provides opportunity for patient to express their emotions	98% (59/60)
13. Appropriately responds to patient's reactions and feelings	100% (60/60)
F. Summary/Strategy	**76%**
14. Asks about patient's readiness to proceed with plan	90% (54/60)
15. Provides a follow-up plan	100% (60/60)
16. Ask patient to briefly summarize their understanding of their medical situation and future direction	15% (9/60)
17. Ask patient if they need any clarification	98% (59/60)
AVERAGE TOTAL TASKS COMPLETED = 16 / 17 (94%)	

Immediately after the simulated patient experience, students completed a 5-item questionnaire (**Figure 2**) to assess their confidence, the perceived benefit of various teaching modalities, and their desire to participate in more simulated patient experiences in the future. Students were instructed to select 1 answer per question. This questionnaire was created by the authors with the intent of collecting students' perception on different teaching modalities and has not been formally validated. A pre-experience questionnaire was not administered.

For each answer choice on the post-experience questionnaire, a numerical value was assigned: strongly disagree = 1, disagree = 2, neither agree/disagree = 3, agree = 4, and strongly agree = 5. The average score was calculated for each question on the post-experience questionnaire using these numerical values. In addition, the percentages for each answer choice selected was calculated and compared. At the end of the academic unit, 77 out of 78 students answered 2 questions on their end of unit exam to assess their knowledge of delivering bad news to patients. One student did not sit for the end of unit exam. This project was approved by the University of Hawaiʻi Institutional Review Board (UH IRB #2019-00286).

The results from the SPIKES checklist, post-experience questionnaire, and end of unit exam questions were summarized by descriptive statistics. The change in students' confidence levels before and after the simulated patient experience was analyzed using a generalized McNemar's test. The relationship between the rating of the simulation experience and the rating of the didactic session was assessed by Kendall's τ (tau) coefficient. The data were analyzed using the statistical software R, version 4.1.1 (R Foundation for Statistical Computing, Vienna, Austria).

Teaching Medical Students How to Deliver Bad News to Patients
Simulated Patient Questionnaire

Thank you for your participation in this simulation patient experience. Please complete the following questions:

1) Prior to this simulated patient experience, I felt confident in delivering bad news to patients (circle one):

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

2) After this simulated patient experience, I feel more confident delivering bad news to patients (circle one):

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

3) Having a simulated patient experience to learn how to deliver bad news was beneficial (circle one):

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

4) The presentation on delivering bad news prepared me for this experience (circle one)

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

5) I would like to see more simulated patient experiences linked to PBL cases in the future (circle one):

   Strongly Disagree Disagree Neither Agree/Disagree Agree Strongly Agree

Figure 2. Post-Experience Questionnaire, among First-Year Medical Students (JABSOM Class of 2023) Using the SPIKES Protocol to Deliver Bad News to Patients

Results

Students completed an average of 16/17 (94%) tasks on the SPIKES checklist during the simulated patient experience. The students scored 96% or better on 5 of the 6 steps of the SPIKES checklist which included "setting the scene," "perception," "invitation," "knowledge," and "empathy." For the "summary/strategy" step, students scored an average of 76%.

Of the 76 students who completed the simulated patient experience and post-experience questionnaire, there was an increase in students' confidence after the simulated patient experience. Before the simulated patient experience, 32% of students agreed or strongly agreed about feeling confident in delivering bad news to patients, which improved to 91% after the simulated patient experience (**Table 2**).

Ninety-six percent of students agreed (39%) or strongly agreed (57%) that the simulated patient experience was beneficial in teaching them how to deliver bad news. When asked about the presentation, 87% of students agreed (55%) or strongly agreed (32%) that it helped prepare them to deliver bad news. Eighty-seven percent of students either agreed (42%) or strongly agreed (45%) that they would like to see more simulated patient experiences linked to JABSOM's PBL cases in the future. Of the 77 students who took the end of the unit exam, 94% correctly answered each of the 2 multiple-choice questions related to delivering bad news (**Table 3**).

A correlation analysis was performed on the different teaching modalities using questionnaire results. There was a strong and significantly positive correlation in students' responses; having a positive experience from the simulation correlated with wanting to see more simulated experiences (Kendall's τ coefficient = .50; $P < .001$). A moderate and significantly positive correlation was observed in students' responses which showed that having a positive learning experience from the didactic session correlated with a positive simulation experience (Kendall's τ coefficient = .33; $P = .002$). Additionally, a moderate and significant positive correlation was observed in students who had a positive experience from the didactic session and students who desired more simulated experiences in the future (Kendall's τ coefficient = .32; $P = .002$).

Table 2. Post-Experience Questionnaire Results among First-Year Medical Students (JABSOM Class of 2023) Using the SPIKES Protocol to Deliver Bad News to Patients					
	% of participants (N = 76)				
Questionnaire	**1 Strongly Disagree**	**2 Disagree**	**3 Neither Agree/Disagree**	**4 Agree**	**5 Strongly Agree**
Prior to this simulated patient experience, I felt confident in delivering bad news to patients	6% (5/76)	29% (22/76)	33% (25/76)	28% (21/76)	4% (3/76)
After this simulated patient experience, I feel more confident delivering bad news to patients	0% (0/76)	1% (1/76)	8% (6/76)	62% (47/76)	29% (22/76)
Having a simulated patient experience to learn how to deliver bad news was beneficial	0% (0/76)	1% (1/76)	3% (2/76)	39% (30/76)	57% (43/76)
The presentation on delivering bad news prepared me for this experience	0% (0/76)	3% (2/76)	10% (8/76)	55% (42/76)	32% (24/76)
I would like to see more simulated patient experiences linked to PBL cases in the future	0% (0/76)	1% (1/76)	12% (9/76)	42% (32/76)	45% (34/76)

Table 3. Delivering Bad News End of Unit Exam Questions

1. A40-year old patient presents to your clinic for a follow-up on her biopsy results. As her physician, you prepare to inform her of her diagnosis of small cell carcinoma. After the patient enters the room, you introduce yourself to the patient and discuss how she has been doing since her last visit. You then ask her, "What is your understanding of your medical situation so far?" This is an example of which step of the SPIKES protocol?

   A: Knowledge
   B: Summary and Strategy
   C: Invitation
   D: Perception*
   E: Setting up the interview

2. You are a physician caring for a 50-year-old woman who has recently received a lung biopsy. The results of the biopsy confirm a small cell carcinoma. During the visit, you ask open-ended questions to see what she understands about her condition, and she replies that she has just received a biopsy, which will provide more information and may provide a diagnosis. Given what you know about the patient's condition, which of the following is the most appropriate next step in this conversation?

   A: Ask permission to provide more information*
   B: Summarize the visit
   C: Warn the patient with phrases that may suggest bad news is coming
   D: Reveal the diagnosis in chunks and check for understanding
   E: Discuss the patient's different options for treatment

*Correct answer

Discussion

Effective communication between a physician and a patient is essential when discussing bad news. Due to the current gap in the medical school curriculum regarding this topic, this project developed a multifaceted learning experience for first-year medical students at JABSOM to develop this skill.

The student cohort correctly performed over 96% of the tasks in 5 of the 6 categories of the 17-item SPIKES checklist: setting up the process, perception, invitation, knowledge, and empathy (**Table 1**). The student cohort scored lower in the summary/strategy category, performing only 76% of the tasks correctly. This is primarily attributed to the fact that only 15% of the students correctly asked "the patient to briefly summarize their understanding of their medical situation and future direction." Most students summarized the visit for their patients rather than asking the patients to provide a summary. In the simulated patient encounter, students performed well in delivering bad news by completing a majority of the tasks on the SPIKES checklist. Many students who participated in this project reported that the individual educational modalities (didactic session and simulated patient experience) were beneficial in preparing them to deliver bad news. Students who had a positive experience with the simulation were more likely to have a positive experience with the didactic session. Similarly, students who viewed the didactic session as a positive experience were more likely to want more simulation experiences in the future. Although most students viewed the individual learning modalities as valuable, the benefit of an integrated teaching approach remains unclear. Future research is needed to explore the effectiveness of an integrated teaching approach compared to the current problem-based learning curriculum. Furthermore, students' confidence improved after completion of these exercises. The simulated patient experience and the didactic session provided the students with an opportunity to practice and improve this important communication skill which may have contributed to their increase in confidence.

There were several limitations in the design of this curriculum improvement project that warrant further discussion. Participation was limited to first-year medical students at JABSOM, and the cohort was further limited by technological malfunction and students who did not consent to be video recorded. The project also utilized non-standardized simulated patients, who were volunteers rather than trained professionals. The inclusion of trained professionals would have helped standardize the encounter. Based on students' feedback, a video example with a trained medical professional to model the encounter and serve as an example would have been beneficial. It is also plausible that there was bias introduced during collection of the data because the authors participated in observation of the videos and scoring of the SPIKES checklist. It would have been ideal to have trained and experienced clinicians evaluate each video recording to limit possible bias because second-year medical students are still early in their clinical training and lack experience delivering bad news to patients. The authors acknowledge that there is a considerable degree of subjectivity and inter-observer bias in evaluating the medical students on some of the items on the SPIKES checklist because some of the items were not well defined. For example, each observer may have had a different threshold for defining what a student must do "to establish rapport" with their simulated patient. Using a post-experience questionnaire to assess students' pre-simulation experiences may have also biased their responses.

Additionally, this project evaluated medical students at a single point in their training and did not give students an opportunity to demonstrate and apply what they learned in a second simulated experience. Since students did not view their video recordings, it would be interesting to examine if the students would benefit from directly reviewing their performances to assess their strengths and weaknesses. As previously noted in the literature, observing video recordings of peers in a group setting could also help students learn techniques and approaches that they might utilize in future encounters.[2] Furthermore, it would have been beneficial to collect individual results with regard to the completion percentage of the SPIKES checklist, post-experience questionnaire, and end of unit exam to draw correlations for each student rather than the cohort.

Future studies may benefit from exploring the use of an integrated approach (PBL, didactic session, and simulated patient experience) in teaching and evaluating other clinical skills in the medical school curriculum with a focus on communication. Pre-clerkship coordinators at JABSOM have incorporated aspects of this project's multifaceted learning approach to the current clinical skills curriculum. One factor to consider is the timing of this integrated teaching approach within the curriculum as the students who participated in this project were first-year medical students with little clinical exposure. Another aspect to explore would be how well medical students retain the knowledge learned from these educational exercises. Therefore, it would be interesting to evaluate if there is a decline in medical students' confidence in this skill throughout their training. Additional studies could incorporate the newly created 12-step S-P-w-ICE-S protocol that adds an additional step w "warning call & pause," and recognizes the non-linear fluid juggling of the 3 steps involving: I "providing information," C "clarifying and comprehension" checks, and E "exploring emotions and providing empathy." [13] This revised model describes a more specific and deliberate process that can be easily adapted to situations such as telephone or video visits, which would be especially relevant during this COVID era.[13]

Conclusion

Given the significance of delivering bad news to patients and the current gap in the medical school curriculum, more emphasis should be placed on developing this communication skill. This curriculum improvement project provided insight into students' perceptions of different teaching modalities and showed an increase in students' confidence in delivering bad news. Thus, this project may serve as an aid for medical educators in developing future curricula to teach communication skills.

Conflict of Interest

None of the authors identify any conflicts of interest.

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Hepatopancreaticobiliary Surgical Outcomes at a Community Hospital

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Abstract

There is a national trend towards regionalizing complex hepatopancreaticobiliary (HPB) surgeries to high-volume institutions. Due to geographic and socioeconomic constraints, however, many patients in the United States continue to undergo HPB surgery at local community hospitals. This study evaluated complex HPB surgeries performed by a single surgeon at a low-volume community hospital from May 2007 to June 2021. A retrospective review of medical records (n=163) was done to collect data on patient demographics and outcomes. Surgical outcomes of HPB procedures were compared to published data from high-volume centers. Overall mortality within 30 days of the procedure was 1% (n=1). Using Clavien-Dindo classification, the major complication rate was 10%, including 8% grade III and 2% grade IV complications. Reoperation (2%) and readmission (3%) were rare in this population. Median length of stay was 7 days and median estimated blood loss was 500 milliliters. Surgical outcomes from the community hospital were comparable to high-volume centers. For pancreatic cancer patients treated at the community hospital, Kaplan-Meier curves revealed comparable 5-year survival time to national data. Complex HPB procedures can be safely performed at a low-volume hospital in Hawai'i with outcomes comparable to large tertiary centers.

Keywords

HPB surgery, pancreatic resection, liver resection, low-volume center, postoperative outcome

Abbreviations

EBL = estimated blood loss
GI = gastrointestinal
HPB = hepatopancreaticobiliary
LOS = length of stay
MGH = Massachusetts General Hospital
MSKCC = Memorial Sloan-Kettering Cancer Center

Introduction

Hepatopancreaticobiliary (HPB) surgeries are complex procedures performed to treat cancer and diseases of the gastrointestinal system (GI), specifically in the liver, pancreas, and biliary tract. In the past decade, mortality and complication rates from major HPB surgeries, including pancreaticoduodenectomy, hepatic resection, and liver transplantation, have declined due to improved surgical techniques and patient selection.[1,2]

There is ongoing debate regarding the optimal setting for the performance of HPB surgeries. A number of studies have shown that institutions with high volumes of HPB cases have lower mortality and morbidity rates.[3,4,5] For example, a recent article published by the *Journal of the American College of Surgeons* found that hospitals ranked in the *US News & World Report* listing of the best hospitals performed a 4-fold higher volume of complex GI cancer resections, which were associated with improved outcomes.[6] These findings suggest that complex HPB surgeries should be regionalized to high-volume tertiary institutions and National Cancer Institute-designated cancer centers for better outcomes.[7,8,9] However, other studies have discovered that low-volume hospitals produce mortality and morbidity statistics that are consistent with those of high-volume hospitals.[10,11,12,13,14] Additionally, for patients in many areas of the country, HPB surgical care at specialized high-volume centers can be difficult to access due to travel and socioeconomic factors. A recent publication found that an additional cost of $7884 per surgery was associated with receiving HPB surgical treatment at high-volume centers.[15] As a consequence, around 40% of complex HPB surgeries are still performed at low-volume, community centers.[16]

For Hawai'i patients, receiving treatment from high-volume cancer centers on the continental United States requires significant travel expenses, long-distance travel, and prolonged accommodations away from home. As a result, many Hawai'i patients may prefer to receive treatment at a local hospital. This study described the outcomes of complex HPB surgeries performed by a single surgeon at a community hospital. Surgical outcomes and patient survival were compared to national data to evaluate differences.

Methods

A retrospective medical record review was conducted for all patients who underwent a major HPB surgery by a single general surgeon trained in liver and gastrointestinal transplantation between May 2007 and June 2021. All operations were performed at Straub Medical Center, a 150-bed community hospital in Honolulu, Hawai'i. HPB procedures included hepatectomies (major and partial), Whipple procedures (removal of the head of the pancreas), distal pancreatectomies (open and laparoscopic), bile duct reconstructions, enucleations, and cystogastrostomies. Minor HPB procedures, such as cholecystectomy, were excluded. All surgeries were performed in accordance with standard surgical techniques. No cases were transferred to a high-volume tertiary center due to surgical complications. Only a handful of patients with HPB conditions were referred to other centers because of transplant techniques and instrumentation not available at Straub Medical Center. A total of 163 patient records were included in the final cohort. The study was reviewed by the Hawai‘i Pacific Health Research Institute and determined to be exempt from Institutional Review Board review.

The following variables were collected for each patient: sex, age, procedure type, diagnosis, estimated blood loss (EBL), length of stay (LOS), major complications, reoperation, readmission, mortality, anastomotic leak, fistula, and death and disease status (alive or dead; with or without disease). Mortality was defined as death within 30 days of the HPB surgery, irrespective of whether the death occurred during or after hospitalization. LOS was calculated from the date of the operation to the hospital discharge date. EBL was measured in milliliters (mL). All post-operative complications were graded according to the validated Clavien-Dindo classification system.[17] Complications graded as III, IV, or V were considered to be major complications. Major complications included renal insufficiency, prolonged biliary leaks, postoperative pancreatitis, liver failure, evisceration, and postoperative hemorrhage. Only the single highest complication grade for each patient was reported. Pancreatic fistulas were graded into 3 groups: grade A, B, and C. According to the International Study Group of Pancreatic Fistula, grade A had no clinical effect (mostly an elevation of amylase from the surgical drain fluid called a "biochemical leak"), grade B fistulas required interventional radiology or prolonged hospitalization, while grade C fistulas required a reoperation.[18] Biliary fistulas were reported if prolonged biliary drainage was observed. Readmissions were reported if the patient was hospitalized within 30 days of the original discharge date. Date of death and disease status at the time of death were determined using medical records and publicly available death notices. If the exact day of death was unknown, the date was recorded as the first day of the known month of death. For pancreatic cancer patients, data on node status and surgical margins were collected.

Subjects were stratified by surgical site and type. Data were transformed into categorical variables to match published literature and facilitate comparisons. For pancreatic surgeries, age, sex, malignancy, EBL, LOS, readmission, reoperation, ICU admission, fistula, 30-day mortality, and 90-day mortality were compared with published data from Massachusetts General Hospital (MGH).[19] For liver surgeries, age, sex, malignancy, operative mortality, LOS, EBL, and ICU admission were compared with published data from Memorial Sloan-Kettering Cancer Center (MSKCC).[20] Binomial probability tests were done to compare study proportions to reported data. T-test was done to compare means. High- and low-volume institutions were defined as hospitals that performed greater or fewer than 11 pancreatic resections per year, and greater or fewer than 11 liver resections per year. Stata IC 15.0 software was used for statistical analyses (StataCorp, College Station, TX). Findings were considered statistically significant at $P<.05$.

For the subset of pancreatic cancer patients (n=49), Kaplan-Meier curves were generated. Subjects were stratified by node status and year of procedure. Survival curves were compared using the log-rank test. Lymph node status was obtained from the surgical pathology report. Procedures were split into 2 time periods (2007-2013 vs. 2014-2021) due to the widespread implementation of neoadjuvant chemotherapy in 2014. The 5-year survival Kaplan-Meier curve was visually compared to data from the National Cancer Institute's Surveillance, Epidemiology, and End Results Program.[21]

Results

From May 2007 to June 2021, a total of 163 patients who underwent complex HPB operations were identified. The cohort consisted of 45% (n = 73) women and 55% (n = 90) men with an average age of 63.8 years. Surgeries in the sample included Whipple procedures (n=57), distal pancreatectomies (open and laparoscopic; n=30), major hepatectomies (n=25), partial hepatectomies (n=38), bile duct tumor excisions (n=4), double bypass (n=2), bile duct injury repair (n=1), revision of hepaticojejunostomy after Whipple performed elsewhere (n=1), and "other" procedures (pancreatic enucleations and cystogastrotomies; n=5). Out of the 163 HPB surgeries, a total of 22 procedures required extensive resection, including 4 Klatskin tumors, 7 vascular reconstructions, and 10 multi organ resections associated with colectomy (n=4), gastrectomy (n=3), nephrectomy (n=2), and small bowel resection (n=1). A majority of patients (94%) underwent surgery secondary to a cancer diagnosis. The overall 30-day mortality rate was 1% (n=1; **Table 1**). The single mortality occurred on the sixth day after an uneventful Whipple procedure due to a myocardial infraction. The overall major complication rate was 10% (n=17; **Table 1**). Four (2%) patients required reoperations for postoperative complications. One reoperation was to address postoperative bleeding after a Whipple procedure. The second reoperation was a re-exploration with negative findings secondary to post-operative hypotension following a Whipple procedure. The third reoperation was performed due to an evisceration after a Whipple procedure combined with a nephrectomy. The last reoperation was secondary to an anastomotic colonic leak during an associated extended right hepatectomy. The readmission rate within 30 days of the discharge date was 3% (n=5). The causes for readmission included transient postoperative liver failure after bile duct tumor excision, diabetic ketoacidosis after Whipple procedure, delayed gastric emptying, treatment for superficial wound infection, and pancreatic fistula abscess formation after distal pancreatectomy. The remainder of the complications included 2 biliary leaks requiring endoscopic stenting, fluid collections requiring percutaneous drain, acute myocardial infarction, and renal failure.

Of the 87 patients who underwent a pancreatectomy, 57 (66%) required a Whipple procedure and 30 (34%) required a distal pancreatectomy. Seven Whipple procedures required vascular reconstruction. Indications for pancreatic resections included pancreatic cancer (n=30), neuroendocrine pancreas tumor (n=15), cystic pancreatic neoplasm (n=12), ampullary cancer (n=8), cholangiocarcinoma (n=5), metastatic colorectal cancer (n=3), splenic cancer (n=3), pancreatitis (n=3), and metastatic kidney cancer (n=1). There were 23 open and 7 laparoscopic distal pancreatectomies. There was 1, 30-day postoperative mortality, resulting in a 1% overall mortality rate (**Table 1**). The major complication rate for the whole group was 10% and included 6 (7%) grade II, 2 (2%) grade IV, and 1 (1%) grade V complications. The most common complication was fistulas, which occurred in 25 (29%) patients. Two patients developed grade B fistulas, while the remaining 23 patients developed grade A fistulas (**Table 2)**. Table 1 displays the remaining operative details.

There were 63 hepatectomies recorded in the study period. Within this group, 25 (40%) underwent a major hepatectomy and 38 (60%) underwent a partial hepatectomy. The major hepatectomy group included trisegmentectomies, left liver lobectomies, and right liver lobectomies. Four cases involved the presence of a Klatskin tumor. The most common indication for liver resections was metastatic colorectal cancer (n=23), followed by hepatocellular carcinoma (n=18), gallbladder cancer (n=6), giant hemangioma (n=2), metastatic lung cancer (n=1), metastatic gastric cancer (n=1), metastatic uterus cancer (n=1), metastatic melanoma cancer (n=1), metastatic breast cancer (n=1), and metastatic leiomyosarcoma (n=1). The mortality rate was zero (**Table 1**). Overall, 6 patients developed a grade III and 1 patient developed a grade IV complication for a total complication rate of 11%. Four patients developed fistulas (**Table 1**). All fistulas developed after extended left hepatectomies indicated for Klatskin tumors (2), intrahepatic cholangiocarcinoma (1), and hepatocellular carcinoma (1). All biliary fistulas resolved after stent placement. Additional hepatic surgery operative details are displayed in Table 1.

There were 13 HPB surgeries that were not pancreatectomy or hepatectomy and included the following procedures: bile duct excisions (n=4), pancreatic enucleations (n=4), double bypass (n=2), bile duct injury repair (n=1), cystogastrotomy (n=1), and revision of hepaticojejunostomy following a Whipple procedure performed elsewhere (n=1). One patient was readmitted due to transient liver failure after a bile duct cancer excision. The remaining operative outcomes of these surgeries are shown in Table 2.

Table 3 shows comparison data from Whipple procedures done at the Straub Medical Center with MGH reported outcomes. Age and sex were similar. Prevalence of malignancy was high in both groups with Straub's cohort having a significantly higher percentage of patients who were diagnosed with a form of cancer (P=.005). Surgical outcome data, including EBL, LOS, grade IV complication, 30- and 90-day mortality, fistula, and reoperation, were comparable between the 2 institutions (**Table 3**). MGH had a significantly higher readmission rate within 30 days of the procedure than Straub Medical Center (22% vs. 5%, P=.003).

Table 1. Operative Details by Surgery Location of HPB Surgeries Performed at Straub Medical Center, 2007-2021

Variables	Total (N=163) %(n)	Pancreas[a] (n=87) %(n)	Liver[b] (n=63) %(n)	Bile Duct Excision (n=8) %(n)	Other[c] (n=5) %(n)
Mortality	1% (1)	1% (1)	0% (0)	0% (0)	0% (0)
Major Complications	10% (17)	10% (9)	11% (7)	0% (0)	8% (1)
Median LOS (days)	7	8	5	7	6
Median EBL (cc)	500	500	500	500	200
Reoperation	2% (4)	3% (3)	2% (1)	0% (0)	0% (0)
Readmission	3% (5)	5% (4)	0% (0)	8% (1)	0% (0)

Abbreviations: LOS, length of stay; EBL, estimated blood loss. [a] Pancreas includes Whipple and distal pancreatectomy (open and laparoscopic) procedures. [b] Liver includes major hepatectomy and partial hepatectomy procedures. [c] Other includes enucleation and cystogastrotomy procedures.

Table 2. Complication Details by Surgery Location of HPB Surgeries Performed at Straub Medical Center, 2007-2021

	Total (N=163) %(n)	Pancreas (n=87) %(n)	Liver (n=63) %(n)	Other (n=13) %(n)
Grade III	8% (13)	7% (6)	11% (7)	0% (0)
Grade IV	2% (3)	2% (2)	0% (0)	8% (1)
Grade V	1% (1)	1% (1)	0% (0)	0% (0)
Total	10% (17)	10% (9)	11% (7)	8% (1)
Fistula	19% (31)	29% (25)	6% (4)	15% (2)
Anastomotic Leak	0% (0)	0% (0)	0% (0)	0% (0)

Comparison between the study's hepatic surgery outcome data and the MSKCC data revealed that the mean EBL, grade IV complication rate, and operative mortality rate were comparable (**Table 4**). Straub Medical Center had a significantly lower mean LOS than MSKCC (7.8 vs. 10.0, *P*=.022) Patient demographics were similar to that of the present study (**Table 4**). Differences between median age and malignancy were not clinically significant.

Kaplan-Meier survival curves of the 49 patients diagnosed with pancreatic cancer revealed that 5- and 10-year overall survival was approximately 30 percent and 24 percent, respectively (**Figure 1**). Figure 2 shows the Kaplan-Meier curve for pancreatic cancer patients by node status. Patients with negative lymph node status at time of surgery were significantly more likely to survive long-term compared to those diagnosed with a positive node status (*P*=.004). At 5 years post-surgery, about 60 percent of pancreatic cancer patients with negative node status were still living, while only about 10 percent of patients with positive node status were still living (**Figure 2, Table 5**). Furthermore, the Kaplan-Meier curve showing survival rates depending on year of surgery (2007-2013 vs. 2014-2021) revealed significant improvement in survival rates for the 2014 to 2021 group (*P*<.001; **Figure 3**). Straub's 5-year survival data for pancreatic cancer patients who underwent a pancreatic resection were comparable to published national data.[22] Both Kaplan-Meier curves revealed a 5-year survival percentage of about 30 percent (**Figure 3**). [22]

Table 3. Comparison of Whipple Procedure Outcomes Performed at Straub Medical Center, 2007-2021 with Massachusetts General Hospital (MGH)

Variables	MGH[a] (n=634) %(n)	Straub (n=57) %(n)	*P*-value[b]
Age (>70 years)	35% (222)	39% (22)	.59
Sex (% male)	49% (313)	44% (25)	.43
Malignancy[c]	82% (519)	97% (55)	.01
EBL (>600 cc)	45% (288)	40% (23)	.47
LOS (>5 days)	90 % (573)	93% (53)	.52
ICU Admission	7% (43)	4% (2)	.33
30-Day Mortality (%)	1% (3)	2% (1)	.23
90-Day Mortality (%)	3% (16)	4% (2)	.65
Reoperation	2% (13)	5% (3)	.13
Readmission	22% (137)	5% (3)	.003
Fistula	17% (106)	18% (10)	.88

Abbreviations: LOS, length of stay; EBL, estimated blood loss. [a] MGH data were obtained from Lee, et al. (2014).[20] [b] Statistical significance was set at *P*<.05. [c] Statistically significant difference in malignancy proportion was not considered clinically significant.

Table 4. Comparison of Hepatic Resection Outcomes Performed at Straub Medical Center, 2007-2021 with Memorial Sloan-Kettering Cancer Center (MSKCC)

Variables	MSKCC[a] (n=1,803) %(n)	Straub (n=63) %(n)	*P*-value[b]
Mean age[c]	58.6	62.7	.01
Sex (% male)	49% (879)	57% (36)	.16
Malignancy	91% (1642)	100% (63)	.01
Mean EBL	871	806.2	.55
ICU Admission	6% (112)	2% (1)	.14
Operative Mortality	3% (55)	0% (0)	.16
Mean LOS	10	7.8	.02

Abbreviations: LOS, length of stay; EBL, estimated blood loss. [a] MSKCC data were obtained from Jarnagin et al. (2002).[19] [b] Statistical significance was set at *P*<.05. [c] Statistically significant difference in age was not considered clinically significant.

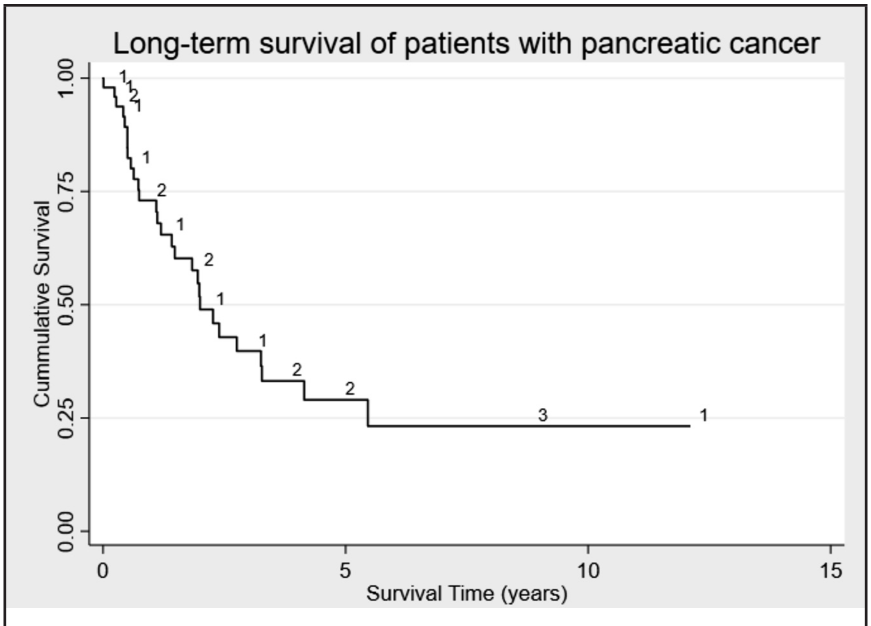

Figure 1. Long-Term Survival of Straub Medical Center Patients Diagnosed with Pancreatic Cancer (N = 49). The Kaplan-Meier curve represents survival time in years for pancreatic cancer patients who underwent a complex HPB surgery ($n_{Whipple}$ = 42, n_{distal} pancreatectomy = 7). Numbers above the curve represent the number of patients lost at the given time.

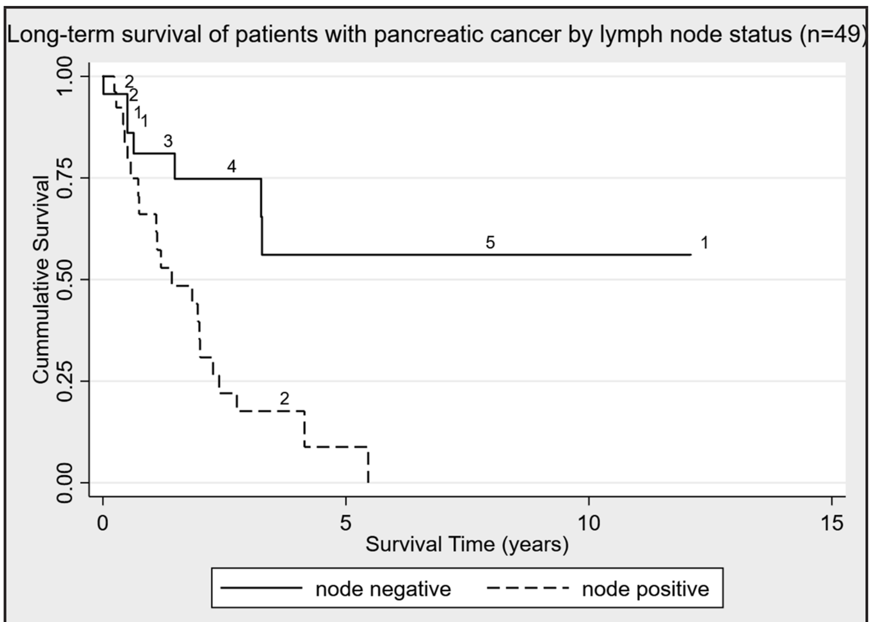

Figure 2. Effect of Lymph Node Status on the Long-term Survival of Straub Medical Center Patients Diagnosed with Pancreatic Cancer (N = 49). The Kaplan-Meier survival estimate represents survival time in years for pancreatic cancer patients who underwent a complex HPB surgery ($n_{Whipple}$ = 42, n_{distal} pancreatectomy = 7). "Node negative" defined as lack of cancer in lymph nodes ($n_{negative}$ = 23). "Node positive" defined as presence of cancer in lymph nodes ($n_{positive}$ = 26). Numbers above the curve represent the number of patients lost at the given time.

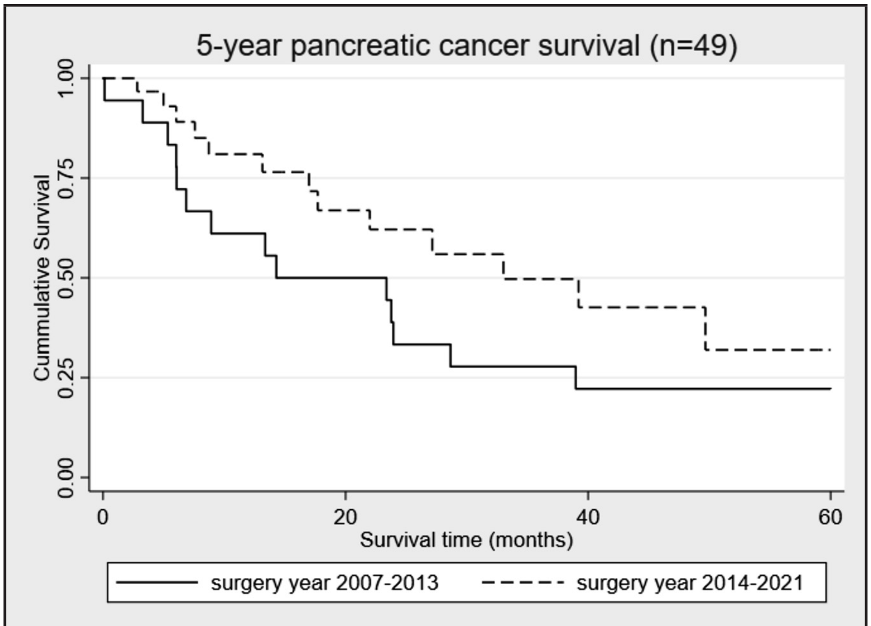

Figure 3. Survival of Pancreatic Cancer Patients at Straub Medical Center. Kaplan-Meier curve shows 5-year survival data from Straub Medical Center. The sample consisted of a total of n=49 pancreatic cancer patients who either underwent surgery between 2007 and 2013 or 2014 and 2021.

Table 5. Effect of Lymph Node Status on 2- and 5-year Survival of Pancreatic Cancer Patients at Straub Medical Center, 2007-2021

Lymph Node Status	Baseline	2-year Survival % (n)	5-year Survival % (n)
Negative	23	44% (10)	26% (6)
Positive	26	27% (7)	8% (2)

Discussion

This study found comparable surgical outcomes for patients who received HPB surgeries at Straub Medical Center to high-volume tertiary centers in the continental United States, suggesting that patients may not require referral to tertiary, high-volume hospitals for complex HPB surgeries. Despite low operation volumes, the overall mortality (1%), major complication rates (10%), median EBL (806.2 mL), and median LOS (7.8 days) were similar to published data from high-volume institutions.[20,21] This is particularly relevant for patients in Hawai‘i because care on the continental United States can be difficult to access due to long-distance and expensive travel.[15]

In addition to similar surgical outcomes, 5-year survival for pancreatic cancer patients in Hawai‘i appears to be comparable to national data. The introduction of neoadjuvant chemotherapy prior to pancreatic resection significantly improved survival as reflected by the time period curves (2007-2013 vs. 2014-2021). Node status is another important predictor of survival of pancreatic cancer patients, as patients with a negative lymph node status had longer survival rates. These findings suggest that pancreatic cancer patients treated at Straub Medical Center receive care that is comparable to the care provided at high-volume hospitals on the continental United States.

Limitations

Several limitations of the present study should be addressed. First, the overall results may not be applicable to all community hospitals in Hawai‘i due to varying levels of resources (eg, fellowship-trained surgeon) and the data resulting from surgeries performed by 1 surgeon. Secondly, as is the case with any retrospective chart review, the potential of missing charts and inconsistency in information coding were a concern. However, effort was made by the authors to carefully report and review all data entries to ensure that the information was as accurate as possible. Lastly, data on minor complications, including grade I and grade II complications, were excluded, which may have affected median LOS.

Conclusion

The results of this study suggest that patients in Hawai‘i do not necessarily need to travel to the continental United States for major HPB surgery, as surgical outcomes for pancreatic and hepatic resections at a community hospital in Hawai‘i are comparable to outcomes at high-volume hospitals. Additionally, a prior study found that patients who were readmitted to their index hospital, the location of the original HPB procedure, had significantly lower mortality rates compared to patients who were readmitted to non-index hospitals due to the index hospital's familiarity with the patient's treatment plan.[23] Thus, a major advantage for patients who underwent surgery at the local community hospital was easy access to the index hospital and surgeon upon readmission, which eliminated the non-index hospitalization risk.

However, it is important to consider that low-volume hospitals can have differing surgical outcome data due to disparate availability of clinical resources and fellowship-trained surgeons.[10] Therefore, these results may be attributable to the presence of a surgeon with HPB surgical experience and ample clinical resources needed to perform complex surgeries. Additional data points, such as comorbidities, patient acuity, and operative time, should be included to permit additional comparisons between high- and low-volume hospitals.

Conflict of Interest

None of the authors identify any conflict of interest.

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Medical School Faculty Development Post-Pandemic – Opportunities in the Digital Shift

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In 1993, the Medical School Hotline was founded by Satoru Izutsu PhD (former vice-dean UH JABSOM), it is a monthly column from the University of Hawai'i John A. Burns School of Medicine and is edited by Kathleen Kihmm Connolly PhD; HJH&SW Contributing Editor.

The coronavirus disease 2019 (COVID-19) pandemic had an overwhelming effect on universities, and in many aspects prompted an instantaneous digital shift in how education, research, and administration were conducted. Faculty members had to quickly adjust and learn new technologies while dealing with other pandemic challenges at work and in the home. Social distancing and shelter-in-place mandates forced the quick adoption and implementation of remote learning and meeting platforms that affected informational and workflow processes, including in the area of faculty development. For medical school faculty, professional development and growth is an important component to become successful teachers, scholars, and researchers and is a required component for accreditation. According to the Liaison Committee on Medical Education, the accrediting body for undergraduate medical education in the US and Canada, Element 4.5 states that "A medical school and/or its sponsoring institution provides opportunities for professional development to each faculty member in the areas of discipline content, curricular design, program evaluation, student assessment methods, instructional methodology, and research to enhance his or her skills and leadership abilities in these areas."[1] Similarly, the Accreditation Council on Graduate Medical Education (ACGME), which accredits all residency and fellowship programs in the US, expects the sponsoring institution in partnership with each residency or fellowship program to ensure the availability of adequate resources to support core faculty members' professional development as educational leaders.[2]

Faculty development during the pandemic shifted largely to online via remote access for many training programs; some programs had to be halted as resources were assessed. The University of Hawai'i (UH) John A. Burns School of Medicine (JABSOM) is a community-based medical school, which means the school does not have a university-owned hospital and relies on affiliated clinical organizations. In addition to managing its own faculty development programs, JABSOM leadership worked closely with affiliated clinical sites to assure curricular and faculty training requirements were still being met both on campus and in the clinics. Moreover, as the only medical school in the state of Hawai'i, JABSOM's leadership worked closely with the Hawai'i State Department of Health's COVID-19 response team and community organizations in disseminating information and helping to strategize on pandemic-related issues. The multidisciplinary teams leveraged expertise in areas that included disease surveillance, health care networks, laboratory resources, and personal protection supply chains, emphasizing the need for interprofessional and cross organization collaborative training in the event of future public health emergencies.

Post-pandemic, medical schools can assess what has been learned throughout the pandemic to create new opportunities and further advance faculty development. Baker et al categorized 4 themes for advancing faculty development beyond the pandemic: (1) faculty development needs to better support work-life balance; (2) academia needs to reassess promotion processes, including tenure and promotion clocks, and recognition of other scholarly activities outside of peer-reviewed publications, particularly for women and underrepresented faculty members; (3) there is a need to better leverage community engagement and learning through broadening dialog and collaborations, as community organizations may be seeking similar goals; and (4) information sharing should be expanded to the global community where faculty development can create pathways to opportunities, collaborations, and open conversations beyond one's campus to affirm and validate both research and scholarly activities.[3] Based on Baker's themes, the following is a discussion on how the pandemic affected faculty development at JABSOM and efforts moving forward by leveraging the digital shift.

JABSOM Faculty Development Post-Pandemic

Theme 1 – Supporting Work-life Practices

Pre-pandemic, faculty development at JABSOM offered various online training programs, such as recorded access to grand rounds (presentations of clinical issues for continued medical education) and required employee training programs that included workplace violence and training on sex discrimination and gender-based violence (Title IX). However, the pandemic further pushed the school to quickly transition professional development to digital formats. JABSOM was able to develop web-based access to various recorded grand rounds and lectures (pre-recorded and recorded during the pandemic), as well as synchronous remote access to meetings using web platforms, such as ZOOM (Zoom Video Communications, Inc). Several web-based faculty training programs were quickly established that included training on professionalism and microaggressions. Remote access to training and development opportunities allows greater access and flexibility to complete training, helping to alleviate commute times, roadway stresses, and scheduling conflicts.

Acknowledging the importance of mental health, pre-pandemic JABSOM established a mindful practice group where faculty members met with trained facilitators with various discussion topics, perspectives, and experiences. The practice also included guided meditation to help employees manage life stresses and to improve overall well-being through deepening self-knowledge. Post-pandemic, the mindful practice group, as well as various standing meetings, grand rounds, and new learning opportunities, continue to utilize digital platforms to better accommodate faculty members and allow greater accessibility for busy schedules. The flexibility accommodated by the digitalization has shown to better accommodate home and family responsibilities and to facilitate a better work-life balance.[4]

Theme 2 – Reassessment of Promotion and Tenure

Promotion and tenure processes in many institutions were developed long before the digital age and often rely almost solely on peer-reviewed publication in prestigious journals. However, definitions of scholarship have evolved, especially in health care, as have methods of dissemination. During the pandemic, many JABSOM faculty members were integral in developing policy, guidelines, and pandemic related scientific informational talks, lectures, and documents. Additionally, digital scholarship can take many forms: blogs or podcasts, policy driven scholarship such as online health care advocacy or quality improvement programs, or patient safety initiatives that involve inter-professional teams collaborating in the virtual world. These examples of scholarly activities are being considered at JABSOM for clinical physician faculty, who are mostly located off campus and tend to have significant administrative responsibility related to patient care or graduate medical education (GME) programs. This group of faculty members typically do not conduct basic science or clinical research and publish results, but may be involved in various digital scholarly activities. Post-pandemic alternative digital formats for scholarly activity is an area to consider for promotion and tenure for all UH classifications.

Theme 3 – Leveraging Community Engagement and Collaborations

As a community-based medical school, leveraging community engagement and collaborations are vital for JABSOM. This was especially pronounced during the pandemic. This includes areas of teaching, training, and providing health care. The medical school and GME curricula depend on strong partnerships with community hospitals, clinics, and health organizations, but broadening the dialog with other organizations with similar goals of improving health care and combining knowledge and resources has the potential to create broader professional opportunities in faculty development. Collaborative software platforms, such as online meetings, document sharing, secure file transfers, and social networking platforms can facilitate the exchange of information regardless of location and time zone. For example, in the spring of 2014, JABSOM partnered with Tripler Army Medical Center to create an annual conference for GME leaders to provide faculty development opportunities when travel to ACGME conferences on the continent was not feasible due to cost constraints. This conference expanded to include all Hawai‘i sponsoring institutions in 2019 but was forced to cancel the 2020 event due to the initial response to the COVID-19 pandemic. The conference was reinstated in 2021 in a completely virtual format with both speakers and attendees participating via the Zoom conference application. In 2022 the conference was transitioned to a hybrid format with some attendees present in the conference room and multiple cameras and microphones set up to capture the content and engage with online attendees. The attendance was split evenly. The success of the hybrid conference was evidenced by 93% of participants being either very satisfied (59%) or satisfied (34%). Planning for 2023 is underway, and, given the popularity of the hybrid model, the planning committee is considering options to ensure maximum participation and benefit for all learners and speakers.

Theme 4 – Information Sharing in a Global Community

Digital formats can facilitate easy access to information globally. In academic medicine the sharing of information is vital in making strides to advance science and better the health and well-being of all humans. Interprofessional collaborations can increase cross discipline understanding and build interdisciplinary networks and connections, which are particularly important during public health emergencies. During the pandemic JABSOM's leadership was an integral participant in the fight against the spread of COVID-19, which included collaborating with the UH schools of nursing, social work, office of public health, state and local government and community organizations, to understand the impacts, needs, and threats of the virus and to provide recommendations for moving forward.[5] Data collected on how particular racial groups (Native Hawaiians, Pacific Islanders, and Filipinos) were disproportionately affected by

COVID-19 adds to the larger conversation on how ethnicity or race affects health disparities and how aggregated data may hide pertinent information.[6] This information shared in a global context contributes to an overall understanding of how race, ethnicity, and other social determinants of health contribute to health inequities. The COVID-19 pandemic demonstrated that open communication and collaborations need to further evolve to promote shared understanding and accelerate progress for the betterment of all persons of the world.

Discussion

As the COVID-19 pandemic wanes, many lessons have been learned in faculty development. The pandemic forced the use of remote and digital platforms and emphasized the need to collaborate across organizations both within the community and globally by sharing information, resources, and processes in efforts towards a common goal. Benefits to digitizing faculty development opportunities include greater accessibility to learning and training opportunities and ability to view online programs at one's own convenience. In a study that surveyed participants in an online clinical training program on clinical teaching methods, effective feedback, and practical tips at Seoul National University College of Medicine, researchers found that the participation rate for the online training was statistically higher and the number of no-shows decreased significantly.[7] The training start and finish times were similar between the pre-pandemic face-to-face and online program. Advantages of this online program included reduced travel time and increased convenience and an atmosphere that had less pressure, in particular for junior participants who felt more confident to exchange opinions compared to in-person training.[7] Additionally, remote platforms easily accommodate tracking of attendance and training completions for evaluation and reporting purposes and captured feedback for future improvements.

Drawbacks to online or virtual training may include technological difficulties and the need to prepare for unexpected technical problems, which may cause mental fatigue. Additionally, with virtual training programs, it is more difficult to role-play scenarios between participants and to detect social cues such as emotions and passion than it is face-to-face.[7] Other potential disadvantages to online meeting or training sessions are the loss of the group thought process, as well as, side-bar conversations, which are beneficial in developing connections with colleagues and promoting shared understandings and reassurances for new challenges.[4] To address these disadvantages, facilitators trained in active learning, use of breakout rooms, and follow-up communications can promote group discussions and connections. Additionally, hybrid approaches that blend face-to-face with online learning may facilitate the benefits from both methods. Lessons learned from virtual learning for faculty development also include the need to set realistic expectations for program development, as time, technology, and resources may be limited.[8]

Conclusion

Pushed by the pandemic, digital scholarship not only has the potential to quickly disseminate information, but also can be used to train and provide greater professional development opportunities. The pandemic forced a shift in perspective on how learning and training opportunities are delivered. Digital platforms have the potential to increase accessibility and inclusivity in various areas: flexibility for those with busy schedules or family responsibilities (includes broader access to recorded activities that one cannot attend face-to-face); better access for those with physical disabilities through assistive computer technology; improved content with online learning strategies that include interactive content, focused learning objectives, and ability to pace online material; sharing of resources across communities and globally; and improved overall mental health by reducing work stress as a result of the digitalization.[9] These potential benefits support LCME Element 4.5, which requires a medical school to ensure that faculty members are informed about and have accessibility to in-person or virtual faculty development programming.[1] Benefits of utilizing digital modalities in faculty development programs should not be lost post-pandemic but should continue to improve by utilizing what has been learned by the digital shift, as well as, continued community and global information sharing and collaborations.

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