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SPOTLIGHT ON NURSING
Expanding Hawai‘i Keiki School-Based Health Services to Meet the Needs of Communities in Hawai‘i
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Hawai‘i Journal of Health & Social Welfare

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A Case Report of a Vertical Zone III Sacral Fracture Due to Acute Lower Extremity Hyperabduction While Windsurfing

Jonathan I. Sheu MD; Morris M. Mitsunaga MD

Abstract

Typically associated with motor vehicle accidents and falls, sacral fractures result from sudden compression of the iliac wings, placing bidirectional traction forces on the anterior and/or posterior aspects of the sacrum. Here we describe a vertical Zone III sacral fracture caused by sudden, forceful hyperabduction of the lower extremities. To the authors’ knowledge this is the first report of a Zone III sacral fracture caused by this mechanism which occurred when the patient encountered a large wave while windsurfing. Imaging revealed a longitudinal fracture to the anterior sacrum, with a concomitant Zone II fracture and pubic symphysis diastasis. The patient was treated using anterior fixation plating and posterior percutaneous pinning. The purpose of this study is to increase provider awareness of an often underdiagnosed fracture, alert water sports enthusiasts of the risks associated with windsurfing, describe signs and symptoms of this often overlooked fracture, and discuss treatment modalities based on radiographic and clinical assessments of fracture stability.

Keywords

sacrum, Denis classification, Zone III fracture, pelvic ring fixation

Abbreviations

APC = anterior-posterior compression
CT = computed tomography
FFP = fresh frozen plasma
LC = lateral compression
PRBCs = packed red blood cells
SI = sacro-iliac
SICU = surgical intensive care units
TTWB = toe touch weight bearing
TXA = tranexamic acid
WBAT = weight bearing as tolerate

Introduction

Windsurfing has become increasingly popular since its inception in 1971. With advances in sail and board technology, riders now average speeds of 26-30 knots (34.5 mph), making the potential for injury high in inexperienced surfers. Most injuries involve the lower extremities, often due to torques about the knee and ankle. Pelvic injuries, however, are uncommon, and this report focuses on one such injury.

Sacral fractures are uncommon injuries presenting in 10-45% of all pelvic fractures, the majority caused by motor vehicle accidents. Fractures in young patients are usually due to high energy mechanisms, while those in the elderly are secondary to lower-energy mechanisms. These are often underdiagnosed; plain radiographs miss 20-30% of sacral fractures subsequently found on computed tomography (CT). Missed fractures can result in neurologic sequelae, stressing the importance of early diagnosis and treatment.

Sacral fractures occur in three zones as described by Denis: lateral to the sacral foramina (Zone I), transforaminal (Zone II), and medial to the foramina (Zone III). Fractures occur most often in Zone II, where the foramina contribute to weaker local structure. Despite comprising less than 16% of all sacral fractures, Zone III injuries have the highest risk (57%) for neurological symptoms, most commonly cauda equina syndrome. The solid bone overlying the sacral midline, especially the anterior cortex overlying S1 and S2, makes midline Zone III fractures extremely rare, and this patient’s injury attests to the sheer suddenness and force required to produce the observed fracture.

Case Report

A 62-year-old healthy male windsurfer presented after a large wave struck him, forcing his legs into sudden hyperabduction in opposite directions. He did not hit any hard surfaces and swam back to shore unassisted. He was hypotensive on scene and taken to an outside hospital, where he received 1% tranexamic acid (TXA) and a pelvic binder. Initial radiographs detected significant pubic diastasis; a CT of the chest, abdomen, and pelvis further detected a Zone III sacral fracture. A Foley catheter was placed; no hematuria was noted. A retrograde CT cystogram ruled out urologic injury, however a large surrounding hematoma was found. Initial hemoglobin was 8.0 (normal range 13.8 to 17.2 g/dL for men). An angiogram ruled out extravasation; no embolization was performed. He received 4 units of packed red blood cells (PRBCs) and 4 units of fresh frozen plasma (FFP); he was then transferred to a tertiary Level 1 trauma center.

Upon arrival, the patient was evaluated by the trauma team and an orthopaedic consultant. He responded well hemodynamically to the multiple transfusions, and a repeat hemoglobin was 12.7. On examination his pelvis was grossly mobile to anterior-posterior (APC) and lateral compression (LC), but there was no saddle anesthesia, radiculopathy, paresthesias, or loss of bowel/bladder control.

Plain films and repeat CT demonstrated a 2.5 cm symphyseal diastasis, a midline Zone III sacral fracture bisecting S1, S2, and S3 and extending to the right of the S1 facet, and a right...
sided Zone II sacral fracture involving the first through fifth sacral foramina (Figures 1A-C). This constellation of physical exam and radiographic findings was strongly suggestive of an unstable fracture. Other injuries included a fracture of the ninth right rib and large extraperitoneal hematomas in the bilateral pelvic sidewalls, retropubic space, and presacral space. The pelvic binder was replaced and surgery planned for the following day. Overnight he developed hypotension warranting admission to the surgical intensive care unit (SICU) where he received another unit of PRBCs. He responded well to transfusion and was cleared for surgery the next day.

An open reduction and internal fixation of the symphysis was performed, along with percutaneous screw fixation of the sacral fracture. A standard suprapubic Pfannenstiel approach was used to reduce the diastasis. Initial fixation was achieved using an anterior plate, and a curved acetabular plate for superior fixation. Two cannulated screws were then placed through the sacro-iliac (SI) joint across the fracture site. Routine closure was performed, a compression dressing applied, and the patient transported to the SICU. Postoperative imaging demonstrated stable fixation (Figure 2).

On postoperative day 1, the patient remained neurologically intact; however, he had extensive ecchymosis and edema to his penis and scrotum. He was kept on a non-weight bearing status to both lower extremities given his recent operation. No chemical thromboprophylaxis was given due to hemodynamic instability and significant transfusion requirement. Serial hemoglobin measurements were within normal limits and stable. He was downgraded from ICU status and did not require further transfusions.

On postoperative day 2, he was permitted toe-touch weight bearing (TTWB) to his right lower extremity and weight bearing as tolerated (WBAT) to his left. Postoperative antibiotics were completed and the Foley catheter removed. He continued to improve over postoperative days 3-5; by the time of discharge he was ambulating >200 feet with axillary crutches. He was discharged with a four-wheeled walker on postoperative day 5.

Postoperative Follow Up

On postoperative day 13, imaging demonstrated a stable construct (Figure 3A). Strength was 5/5 in bilateral lower extremities, his scrotal edema had improved, and pain was well controlled. He maintained bladder control and reported the occasional drop of blood during micturition. His only deficit was persistent erectile dysfunction; this was unknown if it was a true neurological sequela or secondary to local soft tissue injury. He was recommended to follow up with a urologist if his symptoms did not improve.

By 4 weeks he could perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs), and was able to drive. He had since regained limited erectile function. At 6 weeks, repeat X-rays demonstrated backout of the shorter SI screw and a single superior pubic ramus screw (Figure 3B). Osseous healing appeared satisfactory, and he was encouraged to continue physical therapy. At 3 and 6 months, radiographs demonstrated further backout of screws in both the superior and anterior symphyseal plates (Figures 3C, 3D). At 9 months, the anterior and superior plates and screws were removed intact and without complication.

Discussion

Fractures to the sacrum are rare in the surfing community. While these usually result from high-energy APC or LC mechanisms, our case suggests that sacral fractures can also result from abrupt, high-magnitude tension forces. Our case is unique in that rather than a compressive mechanism, our patient underwent hyper-abduction of the lower extremities, leading to injury to the pelvic ring in two areas: anteriorly, a traction-type symphyseal diastasis; and posteriorly, a traction-type midline sacral fracture. Our case exemplifies the well-known fact that sacral fractures often present without neurologic symptoms, even in high-risk fracture patterns, and clinicians should maintain a high degree of suspicion, even with uncommon mechanisms. This case also highlights the importance of a thorough workup for hemorrhage, pelvic ring fractures, and urogenital injury.

Fractures to the pelvic ring are commonly classified using the Young-Burgess system; however, this system describes APC injuries of increasing severity as symphyseal widening accompanied by SI ligament injury, not sacral fractures. Furthermore, while the Denis system was sufficient for our purposes, it does not account for other injuries to the pelvic ring or complex sacral fractures. Our patient’s injury could instead be described as an APC type 2 variant: the diastasis suggests anterior instability, and the sacral fracture suggests posterior instability.

The most common indications for surgical intervention are unstable fractures, neurological compromise, and severe axial or sagittal misalignment. Although the lumbosacral injury classification system (LSICS), like the widely used thoracolumbar injury classification system (TLICS) for thoracolumbar injuries, demonstrates good to excellent inter- and intra-observer reliability, validation on a multicenter level remains to be determined. Due to the uncomplicated nature of our patient’s injury, we did not apply LSICS as part of our treatment algorithm as it would not have changed our method of fixation.

While we cannot make a generalized treatment algorithm for these combined anterior-posterior injuries involving sacral fractures, recent literature emphasizes stabilizing the pelvic ring anteriorly and posteriorly to facilitate early mobility and return to weight bearing, as isolated anterior fixation for combined anterior-posterior injuries results in loss of fixation by one year. Posterior fixation has thus become a cornerstone in sacral...
Figure 1A. AP radiograph of the pelvis, day of admission. Readily visible anteriorly is the widened pubic symphysis (white circle). The midline sacral fracture can be seen posteriorly (white arrow), partially obscured by the shadow of the overlying pelvic binder.

Figure 1B. Axial slice of the CT pelvis, day of admission. The Zone III sacral fracture is more easily appreciable (white arrow).

Figure 1C. 3D reconstruction image of the pelvis, day of admission. Redemonstrated here are the pubic diastasis and zone III sacral fracture (white circles). Also seen in this image is the right sided zone II fracture (white arrow).

Figure 2. AP pelvis, postoperative day 0. Two constructs are seen here: the plate-screw fixation construct anteriorly (white oval), and the two percutaneous screws posteriorly (white box).
fractures, pelvic ring disruption, and lumbopelvic dissociation, further supported by biomechanical studies.\textsuperscript{13,18,24,27,29-34} Of note, while percutaneous screw fixation is useful for uncomplicated fractures, complex fracture patterns may require rigid instrumented constructs.\textsuperscript{27,35-39}

**Conclusion**

The patient presented in our report sustained an uncommon injury with an atypical mechanism of injury. He underwent a standard anterior-posterior fixation construct with a consequen-

tially stable pelvic ring and recovered uneventfully. The authors present this case to stress that unpredictable forces can lead to severe injuries such as this one, and both sports enthusiasts as well as physicians must be aware of the inherent risks.

**Conflict of Interest**

None of the authors identify a conflict of interest.
Knowledge and Provision of Care to Transgender People by Obstetrician-Gynecologists in Hawai‘i

Vincent La MD; Shandhini Raidoo MD, MPH; Kara Termulo MD; Ghazaleh Moayedi DO, MPH

Abstract

Obstetrician-gynecologists (OBGYNs) are often involved in caring for transgender patients but may not be equipped with knowledge about transgender-specific care. The aim of this study was to assess the knowledge base and comfort level of OBGYNs in Hawai‘i with regard to health care for transgender people. This was a cross-sectional survey of OBGYNs in the American College of Obstetricians and Gynecologists (ACOG) Hawai‘i section. The survey was distributed in-person and electronically to a listserv of OBGYNs between October 2017 and August 2018. This survey assessed practice environment, experience with transgender care, and knowledge of health care needs and recommendations for transgender patients. The response rate to this survey was 28%. Approximately half of respondents worked within the University of Hawai‘i system and 47% were private practitioners. A majority (79%) of the respondents had unisex restroom facilities in their offices; however, only a fifth of respondents had gender-inclusive intake forms. Respondents were more comfortable providing care for trans men, people who were assigned female sex at birth but identify as male, compared to trans women, people who were assigned male sex at birth but identify as female (53% vs 38%). Knowledge of preventive care was variable. Most respondents had limited knowledge regarding gender-affirming hormone therapy and requirements for gender affirming surgery (67% and 52% respectively). Despite their limited experience, OBGYNs in Hawai‘i demonstrated a willingness to provide care for transgender patients. Efforts should be made to educate OBGYNs on quality care for transgender people, particularly gender affirming hormone therapy.

Keywords

Transgender; obstetric-gynecologists; cross-sectional survey; gender-affirming care; health knowledge, attitudes

Abbreviations

ACOG = American College of Obstetricians and Gynecologists
BSO = bilateral salpingo-oophorectomy
LGBTQ = lesbian, gay, bisexual, transgender, and/or questioning
OBGYN = obstetrician-gynecologist
US = United States

Introduction

Transgender is a term used to describe people whose gender identity is discordant from their sex assigned at birth. It is estimated that 1 million people in the United States (US) identify as transgender, which is approximately 1 out of every 250 adults.1 Transgender people in the US face numerous barriers when seeking health care, including discrimination from providers and staff, socioeconomic limitations, and providers’ unwillingness or lack of knowledge on how to properly care for transgender patients.1–6

In pre-colonial Hawaiian culture, mahu, meaning to be “in the middle,” were transgender people who were accepted and revered in society. In fact, mahu were respected and renowned for their role as teachers, usually of hula and chant. Following colonization by Europeans and Americans and the forced acculturation of Native Hawaiians, however, transgender individuals were subject to stigma and oppression that still persists in Hawai‘i today.7 The most recent data collected in 2019, from Hawai‘i’s Behavioral Risk Factor Surveillance System reported that approximately 7100 adults (0.7% of the adult population) in Hawai‘i identified as transgender.8 Hawai‘i’s 2018 Sexual and Gender Minority Health Report additionally reported that 1260 of Hawai‘i’s Public High School Students identified as transgender.9

There is a growing body of literature demonstrating that physician education on the care of transgender patients is scant and poses a major barrier to comprehensive health care for transgender people.10–17 Despite the lack of training in care for transgender people, physicians perceive this care to be important and have demonstrated a willingness to learn about health care needs for the trans community. As the medical community becomes more aware of this deficit in knowledge, education on transgender-specific care is increasingly being integrated into medical education.15,19

As reproductive health experts, obstetrician-gynecologists (OBGYNs) often serve as the entry point to health care for transgender people. In 2011, the American College of Obstetricians and Gynecologists (ACOG) published a committee opinion asserting that OBGYNs should assist transgender patients with necessary referrals, provide routine OBGYN preventive care, and manage gender-affirming hormone therapy and surgical care in partnership with experts in transgender care.4 Despite the expectation to provide quality care to transgender individuals, only 29 to 35% of OBGYNs across the US report that they feel comfortable taking care of transgender patients.7 In Hawai‘i, a needs assessment performed in 2014 demonstrated that one of the largest barriers to care for transgender people is discrimination within the healthcare system, including discrimination in service provision and concerns about how health care providers may react to disclosure of sexual orientation or gender identity/expression.10 The aim of this study was to assess the knowledge base and comfort level of OBGYNs in Hawai‘i with health care for transgender people.
Methods

This study was a cross-sectional survey of OBGYNs who practice in Hawai‘i about their knowledge, experience, and comfort regarding the care of transgender patients. This survey was modeled on a prior survey by Unger et al and adapted for Hawai‘i’s transgender population with permission from the author. The survey was administered through REDCap software (Vanderbilt University, Nashville, TN) and consisted of questions about the physician’s practice setting, educational experience, patient population, knowledge of surgical and medical recommendations for transgender care, and comfort level in caring for transgender patients (Appendix A). The survey was distributed at in-person meetings of the Hawai‘i ACOG section and electronically to a listserv of practicing fellows and junior fellows of ACOG in Hawai‘i between October 2017 and August 2018. This list was chosen because the majority of OBGYNs in Hawai‘i are members of ACOG.

Statistical analysis was performed using IBM SPSS Statistics software v25 (IBM Corp., Armonk, NY). Categorical variables were analyzed using Pearson’s chi-squared test. This study was approved by the University of Hawai‘i Institutional Review Board (2017-00634).

Results

There were a total of 211 practicing OBGYNs in the ACOG Hawai‘i section at the time that this survey was conducted. A total of 58 OBGYNs responded, with a response-rate of 28%.

Demographics and Practice Setting

Table 1 illustrates the respondents’ demographics, practice environment, current experience with transgender patients in their practice and gender-inclusive office practices. The majority of respondents (97%) were currently in practice, 50% within the University of Hawai‘i system and 47% as private practitioners. Most respondents (91%) practice on the island of O‘ahu. Approximately two-thirds of respondents had been in practice for 10-30 years. Overall, 12% reported they received education on transgender care during their residency training (data not shown). The majority of respondents (64%) reported that less than 5% of their patients identified as transgender; however, it should be noted that only a fifth of respondents reported having a gender-inclusive gender identity option on their practice’s intake form. Most respondents (79%) had unisex bathroom facilities available in their offices.

Knowledge and Comfort Providing Medical Care for Transgender Patients

Respondents were more comfortable providing care for trans men compared to trans women (53% vs 38% agreed or strongly agreed to being comfortable providing appropriate care for trans man vs being comfortable providing appropriate care for trans women) (Figure 1). Respondents agreed or strongly agreed to being comfortable providing cervical cancer screening (88%) and breast exams (85%) for trans men and breast exams for trans women who have undergone breast augmentation. Approximately 70% of respondents also reported being comfortable providing either a hysterectomy (surgical removal of the uterus) or bilateral salpingo-oophorectomy (surgical removal of the fallopian tubes and ovaries) for gender affirming surgery in trans men.

Knowledge and Comfort with Gender-Affirming Therapy

About two-thirds of respondents (67%) were not familiar with gender-affirming hormone therapy (Figure 1). Fifty-two percent of respondents reported that they were not familiar with the requirements for gender affirming surgery. Knowledge of preventive care services for transgender people who had undergone or were currently receiving gender-affirming therapy was variable, ranging from 22% of respondents correctly identifying the recommendations for digital rectal exams for trans women, to 72% of respondents correctly identifying breast cancer risk following mastectomy for trans men (Figure 2).
Table 1. Demographic Characteristics of Obstetrician-Gynecologists Surveyed about Transgender Care (N=58)

<table>
<thead>
<tr>
<th>Practice Environment</th>
<th>N (%)</th>
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<tr>
<td>Academic institution with residents/trainees</td>
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<tr>
<td>Private practice affiliated with academic institution/trainees</td>
<td>20 (35)</td>
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<tr>
<td>Private practice not affiliated with academic institution/trainees</td>
<td>7 (12)</td>
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<tr>
<td>Not currently practicing</td>
<td>2 (3)</td>
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<td>Still in residency training</td>
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<tr>
<td>Less than 5 years</td>
<td>7 (12)</td>
</tr>
<tr>
<td>5 to 10 years</td>
<td>11 (19)</td>
</tr>
<tr>
<td>10 to 20 years</td>
<td>17 (29)</td>
</tr>
<tr>
<td>20 to 30 years</td>
<td>17 (29)</td>
</tr>
<tr>
<td>More than 30 years</td>
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<td>Hawai'i</td>
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<tr>
<td>Maui</td>
<td>2 (3)</td>
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<td>Kaua'i</td>
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<th>Estimated patient population that identifies as transgender</th>
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<tr>
<td>None</td>
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<tr>
<td>Less than 5%</td>
<td>37 (64)</td>
</tr>
<tr>
<td>5 to 10%</td>
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<th>Gender-inclusive identity option on office intake forms</th>
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<td>Yes</td>
<td>12 (21)</td>
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<tr>
<td>No</td>
<td>24 (42)</td>
</tr>
<tr>
<td>Do not know</td>
<td>13 (23)</td>
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<tr>
<td>Does not use intake forms in office</td>
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<th>Unisex bathrooms in office</th>
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<td>Yes</td>
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<td>11 (19)</td>
</tr>
<tr>
<td>Do not know</td>
<td>1 (2)</td>
</tr>
</tbody>
</table>
Figure 1. Obstetrician-Gynecologists’ Comfort and Familiarity with Gender-Affirming Care

| Comfortable with care of trans women | 12  | 26  | 21  | 34  | 7  |
| Comfortable with care of trans men   | 10  | 41  | 9   | 29  | 9  |
| Comfortable performing cervical cancer screening for trans men | 55  | 33  | 5 3 |
| Comfortable performing breast examinations for trans women after breast augmentation | 45  | 40  | 7 5 9 |
| Comfortable performing a hysterectomy for trans men for gender-affirming surgery | 28  | 43  | 7 10 9 |
| Comfortable performing BSO for trans men for gender-affirming surgery | 28  | 48  | 9 3 9 |
| Familiar with gender-affirming hormonal regimens | 5   | 19  | 9   | 41  | 26 |
| Familiar with requirements for gender-affirming surgery | 7   | 26  | 14  | 36  | 16 |

BSO: bilateral salpingo-oophorectomy

Figure 2. Obstetrician-Gynecologists’ Knowledge of Health Care Maintenance and Risks of Gender-Affirming Hormone Therapy for Transgender Patients

<table>
<thead>
<tr>
<th>% of Correct Responses</th>
<th>22</th>
<th>55</th>
<th>72</th>
<th>43</th>
<th>53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual DRE is indicated for trans women above 50 years old</td>
<td>Transwomen on hormonal therapy require the same screening as cisgender patients</td>
<td>Transmen status post-mastectomy are still at risk for breast cancer</td>
<td>Transwomen on estrogen therapy are at an increased risk for breast cancer</td>
<td>Healthcare maintenance for transgender patients is extrapolated from cisgender evidence-based medicine</td>
<td></td>
</tr>
</tbody>
</table>

DRE: digital rectal exam
Discussion

A major barrier to health care for transgender people is provider knowledge and expertise in caring for this community. This cross-sectional study illustrates that most OB/GYNs in Hawai‘i have limited experience in caring for transgender people and limited knowledge about gender-affirming therapies and cancer screening for transgender communities. However, despite their limited experience, OB/GYNs in the study demonstrated a willingness to provide health care services for transgender patients, particularly those within the scope of practice of their specialty (e.g., cervical cancer screening, breast exams, hysterectomies, and bilateral salpingo-oophorectomies).

OB/GYNs reported feeling comfortable providing breast and cervical cancer screening in trans men and overall felt comfortable performing gender-affirming surgeries for this population. This can likely be attributed to OB/GYNs’ familiarity with cancer screening guidelines for cisgender women. Certain gender-affirming surgeries such as hysterectomy and bilateral salpingo-oophorectomy are within the scope of practice of general OB/GYNs, and the majority of participants were comfortable performing these surgeries for transgender patients.

Although most respondents were comfortable with certain gender-affirming surgeries, many reported that they did not feel comfortable managing gender-affirming hormone therapy for transgender patients and were not familiar with the risks and laboratory monitoring for transgender patients on gender-affirming hormone therapy. This may be due to the fact that the goals of hormone therapy for transgender patients, titrating until the desired physical effects of each individual patient are achieved, are different from those of cisgender female patients with gynecologic conditions that OB/GYNs commonly manage (e.g., contraception, infertility, and menopause). In addition, guidelines regarding the frequency of routine laboratory monitoring for gender-affirming hormone therapy are not always consistent between professional societies. Although the body of literature on gender-affirming hormone therapy and appropriate monitoring is growing, the most current algorithms are derived from expert opinions or extrapolated from cisgender patients on hormonal therapy. This need for individualized hormonal therapy regimens and conflicting or unclear guidelines may make OB/GYNs who are not routinely providing gender-affirming hormone therapy reluctant to take on this component of care for transgender patients without more specific, directed education on this topic.

Another factor that contributes to lesbian, gay, bisexual, transgender and/or questioning (LGBTQ) patients’ access to health care is discrimination in the medical office setting. Evidence suggests a clinical environment that is LGBTQ-inclusive facilitates patient comfort, rapport-building, and willingness to disclose sexual orientation/gender identity. Structural aspects of LGBTQ-friendly office environments include inclusive signage and reading material, inclusive medical intake forms, and at least 1 gender neutral bathroom. OB/GYN providers, who traditionally serve a cisgender female population, may not be aware of the changes they could make to their intake forms, materials, and office design to create an inclusive environment for transgender patients. This is especially important in the community in Hawai‘i, where transgender people were an important part of Native Hawaiian communities prior to colonization and the transgender and gender non-confirming population is estimated to be higher than in the US overall.

The results of this study highlight an area for improvement in physician education regarding comprehensive transgender care. While providers are generally comfortable with cancer screening and gender-affirming surgery that is within their typical scope of practice, there is a need for education regarding gender-affirming hormone management for the transgender community. Findings of the study are consistent with Dr. Cecile Unger’s survey findings in that OB/GYNs are comfortable providing cancer screening for cancers that occur in cisgender women and are willing to provide hysterectomies and salpingo-oophorectomies for the purpose of gender affirmation. ACOG states that transgender care, including but not limited to hormonal treatment, surgery, and cancer screening to aid in transition and preventive health care, are within the scope of practice of OB/GYNs.

This study has several limitations. First, the response rate is relatively low at 28%. In general, survey study response rates are low due to the voluntary design of the study and the reliance on the willingness of those surveyed to participate. Second, only 5 respondents provided care on islands other than O‘ahu. Although the majority of medical care in the state of Hawai‘i is concentrated on O‘ahu, health care providers on other islands play a key role in serving their communities, and the need for trans-friendly providers may be more pronounced in rural communities. Third, the study was distributed across the ACOG Hawai‘i listerv, and although the majority of OB/GYNs in Hawai‘i are ACOG members, this survey did not capture those who are not. ACOG members may be more familiar with current guidelines and updates regarding care, and this may introduce an element of selection bias to the study population.

The study findings demonstrate that OB/GYNs in Hawai‘i are comfortable with some aspects of care for transgender patients but are less familiar with other aspects and may not have clinic spaces that are welcoming environments for transgender patients. OB/GYNs could benefit from additional education on providing quality care for transgender patients. Prior interventions that have demonstrated success are workshops and educational modules for providers already in practice, and integration of transgender care into medical school and residency education. This study also demonstrates the specific need for education regarding hormonal management for transgender patients. In order to meet this need, special attention should be paid to training OB/GYNs on gender affirming hormone therapy. Although
there are many additional disparities in health care access for transgender patients, physician education on providing care for transgender patients is a key component to improving care for the transgender community.

**Conflict of Interest**

None of the authors identify a conflict of interest.

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**References**


**Appendix A**

**Survey Instrument of Knowledge and Provision of Transgender Aare among OB/GYNs in Hawaii**

1. How would you best describe the environment in which you practice
   a. I am a gynecologist practicing in an academic institution with resident trainees
   b. I am a gynecologist practicing in an academic institution without resident trainees
   c. I am a gynecologist practicing in a private practice which is affiliated with an academic institution/ resident trainees
   d. I am a gynecologist practicing in a private practice that is not affiliated with an academic institution/ resident trainees
   e. I am not currently practicing

2. Where in Hawaii do you primarily practice?
   a. Oahu
   b. Hawaii
   c. Maui
   d. Kauai
   e. Molokai
   f. Lanai

3. How long have you been in practice?
   a. < 5 years
   b. 5-10 years
   c. 10-20 years
   d. 20-30 years
   e. > 30 years
   f. Still in residency

4. In the past year, have you attended a grand rounds addressing transgender health issues?
   a. Yes
   b. No
   c. I don’t know

5. During your residency training, was the care of the transgender patient part of your learning curriculum?
   a. Yes
   b. No
   c. I don’t know

6. To your knowledge, were there faculty members in your residency program who care for transgender patients?
   a. Yes
   b. No
   c. I don’t know
7. What percentage of the patients in your practice identify as transgender?  
   a. None  
   b. < 5%  
   c. 5-10%  
   d. 10-20%  
   e. > 25%  
   f. I don't know  
8. I am comfortable taking care of male-to-female transgender (trans-feminine) patients in my practice.  
   a. Strongly agree  
   b. Agree  
   c. Undecided  
   d. Disagree  
   e. Strongly disagree  
   a. Strongly agree  
   b. Agree  
   c. Undecided  
   d. Disagree  
   e. Strongly disagree  
10. Is there a place for patients to disclose their transgender status on your "new patient" intake forms?  
    a. Yes  
    b. No  
    c. We do not use intake forms  
    d. I don't know  
11. Are there unisex bathrooms available for patients to use in your office?  
    a. Yes  
    b. No  
    c. I don't know  
12. I am comfortable performing routine cervical cancer screening for female-to-male patients who still have a cervix/have not undergone gender confirming surgery  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
13. I am comfortable performing routine office breast examination for male-to-female patients who have undergone breast augmentation.  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
14. I am knowledgeable about the requirements transgender patients should meet for gender confirming surgery/sex reassignments surgery.  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
15. How many hysterectomies and/or oophorectomies have you performed for transgender patients?  
    a. None  
    b. < 10  
    c. 10-25  
    d. 25-50  
    e. > 50  
16. I am comfortable performing a hysterectomy on a female-to-male patient who has undergone all formal requirements for gender confirming/sex reassignment surgery  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
17. I am comfortable performing a BSO for a patient who has undergone all formal requirements for gender confirming/sx reassignment surgery.  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
18. I am familiar with the hormonal regimens transgender patients use.  
    a. Strongly agree  
    b. Agree  
    c. Undecided  
    d. Disagree  
    e. Strongly disagree  
19. Guidelines for routine health maintenance for transgender people are based on which of the following:  
    a. Evidence-based guidelines specific for transgender people  
    b. Extrapolation from evidence-based guidelines for the general population  
    c. There are no guidelines  
    d. I don't know  
20. Male-to-female patients on estrogen therapy are at risk for which of the following:  
    a. Breast cancer  
    b. Ovarian cancer  
    c. Liver dysfunction  
    d. Colon cancer  
    e. Myocardial infarction  
21. The best way to screen for prostate cancer in male-to-female patients after age of 50 is which of the following:  
    a. Annual PSA  
    b. Annual digital rectal exam  
    c. Both annual PSA and digital rectal exam  
    d. None of the above  
22. Female-to-male patients who have undergone mastectomy and chest contouring surgery are no longer at risk for breast cancer  
    a. True  
    b. False  
    c. I don't know  
23. Male-to-female patients on hormonal therapy require what kind of breast cancer screening  
    a. They do not require breast cancer screening as they are not at risk  
    b. They require the same screening recommended by the American College of Obstetricians and Gynecologists as natal females (cis women)  
    c. They are at high risk for breast cancer and require earlier and more frequent screening compared to natal females (cis women)  
    d. I don't know  
24. Does the American College of Obstetricians and Gynecologists have a practice bulletin on the care of the transgender patient?  
    a. Yes  
    b. No  
    c. I don't know  
25. If you answered “no” or “I don’t know” to the previous question, which of the following responses best represents how you feel about the matter:  
    a. I responded yes  
    b. I believe there should be a Practice Bulletin written about this subject  
    c. I do not believe there should be a Practice Bulletin written about this subject  
    d. I don’t know
Trends of International Electives in Medical Education Undergraduates in Japan

Kohei Hasebe MD; Anna Tamai MD; Seiji Yamada MD, MPH; Gregory G. Maskarinec PhD

Abstract

Increasing numbers of medical students participate in international electives. However, this recent trend has yet to be examined in non-Western high-income countries such as Japan. The aim of this study is to assess recent trends in Japan, and to suggest ways in which those trends might be influenced. A retrospective cross-sectional analysis of responses to an 8-item questionnaire sent in August 2019 to 82 medical schools in Japan is reported. The responses were received in September 2019. Narrative responses were obtained regarding rationales for exchange programs, participant feedback, and challenges encountered. Responses were translated into English and categorized into themes. Of 82, Japanese medical schools, 56 (66%) responded to the questionnaire. Both the number of incoming and outgoing exchange students had increased steadily over the preceding 3-year period. The leading destinations for Japanese students were the United States (30%), other Asian (36%), and European countries (24%). Narrative responses reveal different rationales from those reported by medical schools in Western high-income countries. Only a few Japanese students chose low or middle-income countries as their destinations, as opposed to the trend seen in Western high-income countries. The reported challenges encountered by the exchange programs may provide insights for improvement. Exchanges have been greatly affected by the coronavirus disease 2019 pandemic. The results can serve as a pre-pandemic baseline data and should promote further international collaboration for medical education under current circumstances.

Keywords
international electives, undergraduate medical education, student, Japan, non-Western high-income country

Abbreviations
COVID-19 = coronavirus disease 2019
IFMSA = International Federation of Medical Student Associations
JABSOM = John A. Burns School of Medicine
OGHIM = Office of Global Health and International Medicine
US = United States
WFME = World Federation for Medical Education

Introduction

Pandemics, the climate crisis, aging populations, and health disparities require that future practitioners be competent in global health. However, medical practice and standards of medical care, as well as the impacts of infectious diseases, non-communicable diseases, and insurance systems, continue to vary globally. While information can be shared instantaneously, practitioners struggle to absorb and implement available knowledge. Training medical students through international elective programs in different medical care systems is one method for future physicians to develop global perspectives.

Globally, the number of medical students participating in international elective rotations has been increasing since the 1990s. Historically, the focus was on tropical medicine, but currently the scope extends to global health issues. Common themes include exposing students to health care systems in settings with different resources and medical cultures. A 2002 survey in the United Kingdom (UK) reported approximately 30% of medical schools provided electives, through which 40% of students visited low-resource countries. Similarly, 24% of medical students in the United States (US) and 44% in Canada participated in global health experiences, also focusing on low-resource countries.

In contrast, Nishigori et al, estimated 3% of medical students in Japan participated in international exchanges during the 2009 academic year—a much lower rate than in more developed countries including Western Europe, the US, Canada, Australia, and New Zealand. They attributed this low rate to systemic issues such as difficulties assigning academic credit, the lack of inter-institutional affiliation, and low English proficiency. From 2011 to 2013, Suzuki et al, conducted a national medical school survey, which is used as a baseline for this assessment. They found a steady increase in exchanges with 70% of Japanese exchange students studying in the US and Europe, while most foreign students arrived from Asia. The majority of exchanges occurred in the last 1-2 years of school, through inter-university partnerships, as part of the official curriculum.

The intent of international exchanges differs by country. Learners from less-developed countries traveling to developed countries generally seek to improve medical practice at home. Conversely, learners from developed countries traveling to less-developed countries seek to experience care delivery under resource-poor conditions. These are familiar themes in the literature of international medical education exchange.

The objective of this study is to assess recent trends in international exchanges, including the rates of participation, to examine barriers, the educational purposes, and future intent of Japanese medical schools, and to suggest ways to influence those trends in Japanese medical schools.

Methods

Study Design

This retrospective cross-sectional study was conducted in 2019 to collect information on international exchanges among medical
students in Japan. The questionnaire, developed by the authors, was independently cross-checked for validity to quantify the degree of participation and gather supporting rationales. While a prior study used the questionnaire to assess curriculum development, the focus of this study was to clarify the destinations of and the rationales for the exchanges.

The 8-item survey both in Japanese and English languages included the following questions: (1) During the academic years 2016 to 2018, how many of your students went to foreign medical schools or facilities, and to which schools did they go? (2) During the academic years 2016 to 2018, how many international medical students did you accept, and from which countries? (3) Was any portion of the exchange mediated by other organizations? (4) Does your school provide credit for overseas experiences? (5) Does your curriculum meet standards set by the World Federation for Medical Education (WFME)? (6) What are the expectations/purposes of the exchange programs at your school? (7) What value have participants reported? And, (8) What challenges has your school faced?

The University of Hawai‘i’s Committee on Human Studies declared this study exempt because individual data was not collected.

Data Collection

Departments responsible for international student exchanges at 82 medical schools in Japan were contacted. Of the 82 schools, 21 with prior exchange relationships with the University of Hawai‘i were contacted by the John A. Burns School of Medicine (JABSOM) Office of Global Health and International Medicine (OGHIM) via email; other schools were contacted by the corresponding author via telephone. Questionnaires in both Japanese and English were emailed in August 2019, and responses were received during September 2019. After responses from a number of schools were obtained, the purpose of the study was clarified to the responding schools, and ambiguous aspects of the questionnaire were rectified. Corrections included clarifying that the requested data was a breakdown of yearly participants by academic year. Narrative reports from participants could include those from foreign students and third-party-assisted exchanges, but only school-approved exchange participants would be included for statistical analysis.

Data Analysis

Data reported by informants were analyzed using Excel, version 2016 (Microsoft Corp., Redmond, WA). Data was categorized by the Japanese medical school, by the country of destination and origin, by the destination facility, and by year, allowing for summary statistics to be derived. Narrative responses in Japanese were translated and categorized into themes in English by 2 native Japanese-speaking authors. After the initial set of themes were developed, the themes were reviewed for similarities and categorized using constant comparison. The final categorization was determined by consensus between the 2 Japanese-speaking authors.

Results

Participants

A total of 56 out of 82 (68%) Japanese medical schools responded to the survey with 2 recently established schools reporting no exchange programs and were excluded from analysis. The remaining 54 schools represent a total of approximately 36,000 (65%) of the estimated 55,000 medical students in Japan. Of the participating schools, 59% (n=32) are public and 41% (n=22) are private schools with 48% (n=26) of the schools located in urban areas (in or adjacent to metropolitan districts).

The number of undergraduate medical students sent overseas increased from 907 in the 2016 academic year, to 960 in 2017 (5.8% increase from 2016), and to 1098 in 2018 (21.1% increase from 2016). The number of students accepted from overseas increased from 1035 in the 2016 academic year to 1129 in 2017 (9.1% increase from 2016), and to 1278 in 2018 (23.5% increase from 2016). The majority of students who visited Japan in 2018 were accepted to private schools (60%, n=771) and in urban areas (72.8%, n=930), with nearly all schools sending at least 1 of their students overseas and receiving visiting international students.

Destinations and Origin of Visitors

The leading destinations for Japanese students in 2018 (n=1098) were the US (n=331, 30.1%), Thailand (n=101, 9.2%), Germany (n=67, 6.1%), China (n=62, 5.6%), and the UK (n=53, 4.8%). Overall, 51 countries and jurisdictions were involved. Categorized into regions, Asia (n=400, 36.4%), the US (n=331, 30.1%), and Europe (n=259, 23.6%) were the main destinations (Table 1).

The leading countries of medical students arriving in Japan in 2018 (n=1278) were Taiwan (n=131, 10.3%), Thailand (n=119, 9.3%), China (n=110, 8.6%), UK (n=100, 7.8%), and South Korea (n=97, 7.6%). In total, 62 countries and jurisdictions were involved. Categorized into regions, Asia (n=716, 56%) and Europe (n=384, 30%) were the main sources of visiting students, while only 7% (n=89) arrived from the US.

Academic Credit and Third-Party Assistance

Of the 54 schools responding, 46 (85%) reported that Japanese students were given academic credit for participation in exchanges.

The International Federation of Medical Student Associations (IFMSA) was the largest third-party organization to support exchanges. Most schools, however, arranged their own exchanges. A small number of Japanese schools received support from other
<table>
<thead>
<tr>
<th>Country</th>
<th>Japanese students overseas n (%)</th>
<th>Participating Japanese schools n (%)</th>
<th>International students in Japan n (%)</th>
<th>Accepting Japanese schools n (%)</th>
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<td>1278</td>
<td>54</td>
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<td>Norway</td>
<td>3 (0.3%)</td>
<td>2 (4%)</td>
<td>3 (0.2%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Pakistan</td>
<td>N/A</td>
<td>N/A</td>
<td>2 (0.2%)</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>
Table 1. Japanese Medical Students Studying Overseas and International Medical Students Studying in Japan in 2018 (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Japanese students overseas n (%)</th>
<th>Participating Japanese schools n (%)</th>
<th>International students in Japan n (%)</th>
<th>Accepting Japanese schools n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>N/A</td>
<td>N/A</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Philippines</td>
<td>29 (2.6%)</td>
<td>6 (11%)</td>
<td>51 (4.0%)</td>
<td>9 (17%)</td>
</tr>
<tr>
<td>Poland</td>
<td>12 (1.1%)</td>
<td>3 (6%)</td>
<td>11 (0.9%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Portugal</td>
<td>N/A</td>
<td>N/A</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Qatar</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Romania</td>
<td>N/A</td>
<td>N/A</td>
<td>3 (0.2%)</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Russia</td>
<td>8 (0.7%)</td>
<td>2 (4%)</td>
<td>10 (0.8%)</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>N/A</td>
<td>N/A</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Singapore</td>
<td>27 (2.5%)</td>
<td>7 (13%)</td>
<td>30 (2.3%)</td>
<td>7 (13%)</td>
</tr>
<tr>
<td>South Korea</td>
<td>51 (4.6%)</td>
<td>13 (24%)</td>
<td>97 (7.6%)</td>
<td>19 (35%)</td>
</tr>
<tr>
<td>Slovenia</td>
<td>2 (0.2%)</td>
<td>2 (4%)</td>
<td>2 (0.2%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Spain</td>
<td>6 (0.5%)</td>
<td>3 (6%)</td>
<td>3 (0.2%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Sudan</td>
<td>N/A</td>
<td>N/A</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Sweden</td>
<td>6 (0.5%)</td>
<td>4 (7%)</td>
<td>9 (0.7%)</td>
<td>6 (11%)</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4 (0.4%)</td>
<td>3 (6%)</td>
<td>3 (0.2%)</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Taiwan</td>
<td>42 (3.8%)</td>
<td>18 (33%)</td>
<td>131 (10.3%)</td>
<td>17 (32%)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>10 (0.9%)</td>
<td>1 (2%)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Thailand</td>
<td>101 (9.2%)</td>
<td>20 (37%)</td>
<td>119 (9.3%)</td>
<td>24 (44%)</td>
</tr>
<tr>
<td>Tunisia</td>
<td>N/A</td>
<td>N/A</td>
<td>3 (0.2%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Turkey</td>
<td>N/A</td>
<td>N/A</td>
<td>8 (0.6%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>18 (1.6%)</td>
<td>3 (6%)</td>
<td>18 (1.4%)</td>
<td>4 (7%)</td>
</tr>
<tr>
<td>Uganda</td>
<td>2 (0.2%)</td>
<td>2 (4%)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>53 (4.8%)</td>
<td>17 (32%)</td>
<td>100 (7.8%)</td>
<td>11 (20%)</td>
</tr>
<tr>
<td>Ukraine</td>
<td>N/A</td>
<td>N/A</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>United States</td>
<td>331 (30.1%)</td>
<td>47 (87%)</td>
<td>89 (7.0%)</td>
<td>19 (35%)</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>1 (0.1%)</td>
<td>1 (2%)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Vietnam</td>
<td>18 (1.6%)</td>
<td>6 (11%)</td>
<td>11 (0.9%)</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Zambia</td>
<td>5 (0.5%)</td>
<td>3 (6%)</td>
<td>2 (0.2%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (0.2%)</td>
<td>N/A</td>
<td>8 (0.6%)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

N/A = not applicable

programs, including the Japan Association for Development of Community Medicine, the Japan Medical Education Foundation, the Japan-North America Medical Exchange Foundation, JrSr, and the Noguchi Medical Research Institute. These organizations mostly support sending Japanese students overseas as extracurricular activities.

Twenty schools reported that they were accredited by the WFME. Some reported that they were in the process of accreditation.

Narrative Responses for Rationale, Benefits, Challenges

Rationales for international exchanges at Japanese medical schools were categorized into 6 themes on the basis of the similarity of responses. The overarching themes were to foster international perspectives, to gain experiences not available at the home facility, and to enhance cultural competency (Table 2).

The benefits of student experiences were also categorized into 6 themes. Cultural exposure and development of language and communication skills were the top 2 themes (Table 3).

The challenges reported by medical school administrations were categorized into 10 themes, with the top themes being the burden of making arrangements, securing financial support and accommodations, and language barriers (Table 4).
Table 2. The Rationale Reported by Japanese Medical Schools for Exchange Programs (n=54)

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Total (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>International perspectives: To develop professionals with international perspectives. To actively work internationally, and to practice global standard.</td>
<td>(52, 96%)</td>
</tr>
<tr>
<td>More exposure: To expose students to healthcare in different context. To provide opportunity to interact with foreign students.</td>
<td>(23, 43%)</td>
</tr>
<tr>
<td>Humanity: To enhance cultural competency/understanding of diversity. To nurture humanity.</td>
<td>(19, 35%)</td>
</tr>
<tr>
<td>Transforming the education system: To introduce international perspectives to the school. To encourage international communication by adapting to contemporary trends in globalization, diversity, and collaboration.</td>
<td>(15, 28%)</td>
</tr>
<tr>
<td>Language Skills: To improve communication skills in English.</td>
<td>(13, 24%)</td>
</tr>
<tr>
<td>Leadership: To develop professionals who contribute to the advancement of medicine.</td>
<td>(4, 7%)</td>
</tr>
</tbody>
</table>

Table 3. Benefits for Participants, Mix of Japanese and International Students, Reported by Japanese Schools (n=54)

<table>
<thead>
<tr>
<th>Benefits for Participants</th>
<th>Total (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural exposure: Experienced differences in medical systems, medical technology, medical education systems.</td>
<td>(44, 81%)</td>
</tr>
<tr>
<td>Language / Communication (26, 48%): Advanced language skills. Recognized the importance of improving language and communication skills.</td>
<td>(26, 48%)</td>
</tr>
<tr>
<td>Students interaction: Interaction with international medical students. Exposed to highly motivated and knowledgeable international students.</td>
<td>(25, 46%)</td>
</tr>
<tr>
<td>Future vision / Role model: Recognized the importance of a proactive attitude towards learning. Improved motivation.</td>
<td>(22, 40%)</td>
</tr>
<tr>
<td>More exposure: More opportunities for cases or procedures. Learned about diseases and treatments specific to destination.</td>
<td>(18, 33%)</td>
</tr>
<tr>
<td>Personal growth: Broadened perspectives.</td>
<td>(13, 24%)</td>
</tr>
</tbody>
</table>

Table 4. Challenges Reported by Japanese Medical School Personnel in Arranging Exchange Programs (n=54)

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Total (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative burden for set-up: Applicants’ demand exceeds school capacity or require fine adjustment. Burden of the visa/immigration/travel clearance process</td>
<td>(31, 56%)</td>
</tr>
<tr>
<td>Financial / Accommodation: Financial burden on students. Lack of free or reasonable accommodation for foreign students</td>
<td>(23, 43%)</td>
</tr>
<tr>
<td>Language barrier: Better English skills needed for more valuable experience. Better English skills needed for more valuable experience</td>
<td>(15, 28%)</td>
</tr>
<tr>
<td>Quality of education / Experience: Variable quality and quantity of clinical experience by school/department. Providing appropriate predeparture preparations</td>
<td>(12, 22%)</td>
</tr>
<tr>
<td>Cultural difference / Attitude: Trouble rooted in cultural difference (eg, inappropriate behavior in the context of accepting countries)</td>
<td>(8, 15%)</td>
</tr>
<tr>
<td>Safety / Security concerns: Safety concerns and troubleshooting in foreign countries (eg, terrorism, remote support)</td>
<td>(8, 15%)</td>
</tr>
<tr>
<td>Motivation: Not many students apply for international electives despite of open slots</td>
<td>(5, 9%)</td>
</tr>
<tr>
<td>Burden of teaching staff: Burden for teaching staffs to accommodate the visitors with teaching</td>
<td>(5, 9%)</td>
</tr>
<tr>
<td>Unexpected troubles: Trouble related to transportation delays (eg, due to a natural disaster)</td>
<td>(2, 4%)</td>
</tr>
<tr>
<td>None: None or no response</td>
<td>(6, 11%)</td>
</tr>
</tbody>
</table>

Discussion

Medicine and Medical Education in Japan

Medical practice and education in Japan have unique historical and cultural backgrounds. Traditional Chinese medicine was introduced in the 5th century. Western medicine was introduced by the Dutch from the 17th to the 19th centuries, while Japan was largely closed to the outside world. In 1868, the government of Japan adopted the German medical system. After the end of World War II, the health care system was restructured during the US occupation. After universal health insurance was instituted in 1961, life expectancy at birth increased to the world’s longest by the late 1970s, while maintaining relatively low health expenditure (11.0% of GDP in 2019). In 2011, on the 50th anniversary of universal health insurance, an article published in The Lancet held up Japan’s post-war experiences and reforms in national insurance, social welfare, and medical system as a role model for the world. In 2018, persons 65 years or older constituted 28.1% of the population. The proportion of elderly is expected to grow to 33.3% in 2036 and 38.4% in 2065, posing unprecedented challenges.

While lectures have been central to undergraduate medical education, Japan’s schools are shifting to interactive learning methods such as problem-based learning and integrating more
clinical rotations. The Objective Structured Clinical Examination (OSCE), introduced in 2005, is 1 component of educational reform to meet WFME standards. Two years of mandatory postgraduate training were introduced in 2004. Specialty training and certification are also undergoing modernization by implementing third-party regulations and evaluation.

After a 37-year period without a new medical school being founded, 2 new medical schools were established in 2016 and 2017. The International University of Health and Welfare, established in 2017, has introduced a globally-oriented curriculum, with most classes held in English. 14% of students are of foreign origin, and at least 4 weeks of mandatory international rotations are required in the final year.

While English language instruction is required in Japan starting at the primary school level, there is little emphasis on conversational skills. Without extracurricular exposure, few students learn conversational English by the time they enter medical school. Much medical information is delivered in or translated into Japanese. Thus, students find it difficult to achieve English proficiency during medical school. Japan ranks 78th among 112 countries for English skills, categorized as low, and close to very low proficiency.

Number of Participants

This national survey revealed an increase in the total number of Japanese students sent overseas by the 54 responding schools between 2016 and 2018. A previous survey with 80 medical schools responding, reported 726 students sent overseas in 2011, 790 in 2012 and 749 in 2013. In 2018, approximately 3% (1098/36,000 students in responding schools) of Japanese medical students participated in international electives. This rate can be estimated as high as 6% if the denominator is limited to 4th to 6th year students who are in the clinical portion of their curriculum, an increase from 3% in 2009. This rate is still low compared to developed Western countries due to the challenges revealed in this study, starting with delay in the implementation of international exchanges in the official curriculum in Japan during 1995-2000. The number of foreign students accepted significantly increased from 263 in 2011 [an approximately 7-fold increase from 2011 to 2018 (assuming a hypothetical total figure of 1893 for 2018 (1278 x 80/54, adjusted for all Japanese medical schools, excluding the 2 newly established schools)]. Although a gradual, steady increase in numbers is evident, international electives among Japanese students are still not common in comparison to Western high-income countries.

Preferences in Destinations

In the pursuit of global health, it has become commonplace for medical students from Europe and the US to engage in service-learning in developing countries. More attention is being paid to the perspectives of hosts and to ensuring the quality of the student experiences in international electives. In contrast, Japanese schools send their students mainly to high-income countries. The proportion of medical students from Japan going to the US is quite significant, particularly compared the proportion of student visitors to Japan from the US (7%). Recently, Asian countries have gained popularity as the destinations compared to the 2011 to 2013 period, when 70% visited North America or Europe.

Takeda et al, reported that Japanese medical students visiting high-income countries obtained more clinical knowledge, while visitors to low- and middle-income countries learned more about social determinants of health. Consequently, the latter developed an interest in pursuing medical careers in remote areas (odds ratio [OR] 3.1, 95% CI 1.29-7.48) and with global health organizations (OR 2.1, 95% CI 1.03-4.26). This is congruent with the interests of medical students from Western, high-resource countries. In this study, 1 medical school noted “social determinants of health” in its rationale. Their students mostly traveled to low-resource countries.

Hayashi et al, reported on the long-term effect of international student electives more than 10 years later from 23 Japanese physicians. Of the 23, 19 had traveled to the US. This study revealed the benefits of international electives on self-relativization, which contributed to the participants’ identity formation as medical professionals. There was, however, no long-term influences on specialty versus primary care career choices.

Battat et al, conducted a literature review to delineate common global health competencies. The most highly cited competency (15.6%) was the skill of interfacing with different populations, cultures, and health care systems. Other common competencies reported in this study were immigrant health (9.4%), primary care in diverse cultural settings (9.4%), and understanding health care disparities among countries (6.3%). In this study, the results did not show such skills were emphasized in the rationales reported by Japanese medical schools. This may partly account for the difference in the destinations chosen by Japanese and Western institutions.

Some Japanese schools, particularly private schools and urban schools, accept international medical students for the purpose of encouraging intercultural communication among their own students. Comments from international visitors to Japanese schools are posted on the websites of several Japanese schools, which may provide insights for visiting students to decide on their destinations.

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Barriers to Exchange Programs

Challenges reported by the schools will need to be addressed in order to advance the exchange programs. In order to maximize educational outcomes and student safety, Japanese schools may benefit from incorporating available curricular resources, including guidance on pre-departure training and post-travel debriefing.29–32

Many Japanese schools provide accommodations for international guests. Some schools report inequity in exchange relationships, with their students visiting overseas not being provided accommodations.

A low percentage of Japanese schools included “English” or “language” in their rationale for international exchanges. Although English is generally utilized, students from English-speaking countries may still experience significant language barriers.33 Conversely, when Japanese students (who do not possess high English proficiency) visit countries where most of the population do not speak English, safety may be compromised because of their limited ability to communicate. Such hurdles may influence their choice of destination. Immersion is a rapid way to improve language fluency.34 As English is most commonly used in academia globally,35 it is reasonable that institutions in non-English speaking countries would seek English language immersion for their medical students.

Future Developments

The WFME standards have been a focus of curricular reform for many Japanese medical schools. As of June 2022, 63 schools had been accredited by the Japan Accrediting Council for Medical Education, an agency recognized by the WFME;36 other schools are in the process of becoming accredited. Burdick et al, suggest international exchange as a potential solution to the worldwide shortage of clinical training sites as seen in the US.37 Japan does not have a shortage of clinical training sites and is thus potentially poised to play a role in global medical education. With more schools meeting WFME standards, visiting students are assured of instruction that meets international accreditation standards. With its national insurance system and a health care system adjusting to a rapidly growing geriatric population, international students can take home valuable insights to their home countries.38 In addition, a very low crime rate ensures general safety for international students visiting Japan.39

While the US has been a major destination for Japanese students, the US Federal government has begun to require a J-1 (cultural and educational exchange) visa even for short-term training. With the advent of COVID-19 restrictions, the US has temporarily halted approving new non-immigrant visas in June 2020. This has already diminished the number of students traveling to the US. Japanese schools may choose to forge relationships with institutions in other countries or transition to other types of experiences such as online platforms.

The COVID-19 pandemic has not only severely curtailed overseas travel. It has also had far-reaching effects on the curricula of medical schools world-wide. All Japanese schools suspended international exchanges in spring 2020. Further developments can be expected as the pandemic evolves, and creativity will be required to develop alternative modes of international collaboration.39,40

As of 2018, there had been a steady increase in participants in international exchange programs in Japan, both as the origin and the destination. While the COVID-19 pandemic has severely curtailed international exchanges, this study may help Japanese schools reconsider the rationales of exchange programs, establish exchange partners in light of the positive experiences of other institutions, motivate transition to online platforms, and ask for third-party assistance from organizations such as IFMSA. The value of international exchange is clear, and the immersion experience cannot be replaced.

In the era of instantaneous transmission of information and universal problems such as pandemics and the climate catastrophe, the health workforce of the future must be fluent in global perspectives. Non-Western high-income countries will be increasingly involved in international exchange programs. Further studies that examine developing tendencies in international electives in other regions, such as elsewhere in Asia, are warranted in order to better delineate mutual agendas and benefits.

Limitations

The participation rate of this survey was not as high as the previous study, which was supported by a major grant and achieved a 100% response rate.7 The questionnaire may have been interpreted incorrectly by respondents, such that some schools may have reported on research exchanges, language exchanges, or students in other disciplines such as nursing. Students arranging international exchanges privately or through organizations separate from official school channels would not have been identified. The narrative portion of responses ranged from official reports to the personal impressions of respondents. Such subjective judgments may not be representative of the experience of all exchange students. Also, the reported program benefits were not clearly separated as to whether the reports were from Japanese or foreign students. Two native Japanese speaking authors translated the responses in Japanese and categorized them into themes, a process that may have affected data accuracy. Some respondents may have had divergent understandings of political geography (eg, whether or not Hong Kong should be included with China).

Conclusion

This study demonstrated an increasing trend of international exchanges in undergraduate medical education in Japan as both the origin and the destination prior to the COVID-19 pandemic. The preferences in destination and the rationales for Japanese
student participation were distinct from the general focus of Westerners on low-income countries. One reason for the differences may be less concern about health disparities, given Japan’s national health insurance system. Another may be the perceived need in Japan, as a non-English speaking developed country, for promoting international perspectives and communication skills in English to advance technology and systems in Japan’s own institutions. Given the willingness to interact, the proportion of schools meeting WFME standards, the safety, the health care system, and the evolving social reform with the rapidly expanding aging population, Japan deserves consideration as an international learning site. With the growing interest in international exchange, third-parties (eg, the IFMSA) may be called upon to facilitate student rotations. Further studies from other non-Western developed countries are warranted to prepare mutual agreements and to benefit international medical student exchanges worldwide.

**Conflict of Interest**

None of the authors identify a conflict of interest.

**References**

Spotlight on Nursing

Expanding Hawai‘i Keiki School-Based Health Services to Meet the Needs of Communities in Hawai‘i

Deborah Mattheus PhD, RN, PNP-BC; Laura Trinkle FACHE, MHA, MSS, BSN; Melissa Owens DNP, RN, FNP-BC, NCSN

The Spotlight on Nursing is a recurring column from the University of Hawai‘i at Mānoa Nancy Atmospera-Walch School of Nursing (NAWSON). It is edited by Holly B. Fontenot PhD, APRN, WHNP-BC, FAAN, FNAP; Research Director for Department of Nursing, Frances A. Matsuda Chair in Women’s Health, and Professor for NAWSON, and HJH&SW Contributing Editor; and Joanne R. Loos PhD, Science Writer for NAWSON.

Acronyms

AAP = American Academy of Pediatrics
APRN = advanced practice registered nurse
DOE = Hawai‘i State Department of Education
DOH = Hawai‘i State Department of Health
HK = Hawai‘i Keiki: Healthy and Ready to Learn
HKHH = Hawai‘i Keiki Health Hotline
NAWSON = Nancy Atmospera-Walch School of Nursing
NP = nurse practitioner
PMHNP = psychiatric mental health nurse practitioner

The importance of in-person learning was highlighted during the school closures due to the coronavirus 2019 (COVID-19) pandemic. Keiki (children in Hawaiian language) spend many hours in school where they are provided essential support services which include free meals, school counseling, and school health services, which may be provided by a registered nurse (RN) or an advanced practice registered nurse (APRN) (nurse practitioner [NP]). In addition to academics, schools utilizing the Whole School, Whole Community, Whole Child model create an environment where keiki can develop healthy relationships, identity, and emotional skills that can improve overall wellbeing.¹ For academic year 2022-2023, 69% of the public non-charter schools in Hawai‘i are considered Title 1, which is a designation for schools that have a minimum poverty threshold of 47.2%. The fall of 2022 will represent the third year in which keiki will head back to school since the start of the pandemic. Many of these keiki and families will continue to face ongoing health, economic, and social challenges, with low-income families and those living in rural and underserved areas continuing to be disproportionately affected by COVID-19.²

In order to better address these challenges, the Hawai‘i Keiki: Healthy and Ready to Learn (HK) program has expanded. HK first launched in 2014 as a partnership between the University of Hawai‘i at Mānoa Nancy Atmospera-Walch School of Nursing (NAWSON) and the Hawai‘i State Department of Education (DOE) with a goal of keeping keiki healthy and ready to learn.³ HK began with 4 nurses providing school-based on-site services at 4 schools and consulting for 59 public schools across 5 DOE complex areas. Between the years 2014-2019, the program grew to a total of 18 nurses, which included 15 APRNs (NPs) and 3 RNs providing services and consulting for 236 (out of 257 total) schools across all 15 DOE complex areas. This allowed for each complex area in the state to have a nurse available for consultations on student health issues and/or provide health education; however, only 18 schools out of 257 total schools had an on-site nurse to provide direct services in the school health room/clinic. While there was a notable increase in the number of students seen by a HK nurse who can assess and often times return the student back to the classroom, at that time (2019) the majority of DOE schools continued to be without an on-site nurse clinic, resulting in students being sent home from school due to illness or injury and potentially kept out of school until they are able to access a community health provider.⁴

The closure of schools as a result of the pandemic put a spotlight on the importance of health in the school setting and reinforced the value that HK brings to Hawai‘i public schools. When school campuses initially closed, school-based health services disappeared along with other important physical and emotional support services. Recognizing the need to provide equitable access to health services, the HK program quickly developed and implemented the HK Health Hotline (HKHH) utilizing interactive technology and mobile devices.⁵ Through HKHH, members of the school community had access to a nurse, Monday through Friday 8 AM to 3 PM, to answer any health-related questions, provide information on school and community resources, and to offer keiki in need of health care the opportunity to receive a telehealth visit with an HK APRN (NP). Unlike the on-site school health nursing services prior to school campus closures, which limited direct patient services to HK participating schools, HKHH expanded patient care offerings to families in all DOE schools.⁶
Nationally, school nurses have played an essential role in guiding communities throughout the pandemic\(^6\) and HK has been a critical resource for the delivery of clinical health services, health education, and many other COVID-19 response activities and responsibilities within Hawai‘i. School nurses have historically been involved in communicable disease surveillance, prevention, and care coordination.\(^7\) However, with a shortage of HK nurses and/or support staff, HK faced the challenge of distributing much-needed services to students across the state. The DOE recognized this challenge, noting the importance of re-opening schools for in-person learning. Therefore, during Summer 2020, the DOE provided funding to hire an additional 15 RNs to assist in the COVID-19 response. This included COVID-19 education, school mitigation efforts, contact tracing of cases including family follow-up to assure safe return to school, as well as continuing to provide direct patient care services for students. Mobile telehealth equipment was also added to HK on-site school clinics to facilitate the HK RN’s ability to obtain a virtual health exam with an HK APRN (NP) for students whom had potentially a higher level of health concern. This service, outside of the HKHH, facilitated a student’s ability to obtain immediate primary care services from a NP in the school setting and return to class or home during a time when there were numerous barriers to health care for families associated with the pandemic.

COVID-19 testing also became a priority for schools to reduce the spread of infection and, thus, contributing to keeping schools open. The HK program assisted the Hawai‘i State Department of Health (DOH) and DOE in the implementation of the Centers for Disease Control and Prevention Increasing Community Access to Testing program in schools as well as assisting DOH and health partners with COVID-19 vaccinations for students, DOE staff, and families. By the end of the 2020-2021 academic year, HK had launched on-site nursing services at 13 additional schools across the state, increasing total HK clinical sites to 35.

The 2021-2022 academic year continued to present students, families, communities, and schools with challenges on how to best move forward. Despite mitigation efforts and mass vaccinations, the pandemic continued to impact the people of Hawai‘i. Furthermore, the need for mental health/behavioral health services was exacerbated following months of distance learning, high stress levels for students and families due the pandemic, and a lack of access to mental/behavioral health services. The rate of adolescent depression, anxiety, and suicide attempts has risen during the pandemic,\(^8\) making it even more important to provide an additional safety net in addition to school-based mental and behavioral health services already in place. Thus, HK received additional funding from several sources to continue to expand school-based health services.

By the start of the 2021-2022 academic year, with funds from the DOE, the HK program grew to a total of 56 nurses. Then, with additional expansion funds from DOH in Spring of 2022, HK finished the 2021-2022 academic year with 60 nurses (20 APRNs [NPs] and 40 RNs), and 1 grant funded psychiatric mental health nurse practitioner (PMHNP), each serving in various roles dedicated to schools throughout the state and/or on the HK administrative/leadership team. This expansion ensured that 56 schools had on-site services and 257 schools had consulting service, with every DOE complex area having access to RNs in multiple schools plus 1 dedicated APRN (NP) who would consult across schools. This expansion brought the nurse-to-student ratio down from 1 nurse to 5294 students in 2021 to 1 nurse per 3065 students in 2022. However, these rates are still far shy from the American Academy of Pediatrics (AAP) recommendation of 1 nurse per school.\(^9\)

**2021-2022 Program Outcomes**

HK has 5 main goals: (1) reduce preventable, health-related, chronic absenteeism while minimizing interruption to instructional time; (2) enhance wellness in the school environment and community; (3) promote optimal student health through preventive screening and effective services for chronic health conditions; (4) collaborate with community partners and organizations to provide coordinated school health programs, services and resources; and (5) promote the nursing profession. The ability for HK to successfully meet these goals was certainly challenging during the pandemic. However, the expansion resulted in the program’s ability to support students, schools, and the community by increasing health services statewide.

The program expansion allowed for more than 10 000 visits to be completed by HK nurses (RNs and NPs) in their clinics during the 2021-2022 academic year. In addition, through the use of technology, HK APRNs (NPs) conducted more than 200 virtual visits for physical health and more than 250 virtual visits for mental and behavioral health concerns via the PMHNP. The HK program also provided over 250 educational sessions, attended by over 10 000 DOE students or DOE staff. These educational sessions include emergency medication training for teachers, hands-only CPR, COVID-19 mitigation strategies, vaping prevention, and presentations on common pediatric chronic diseases (including identification of mental health concerns for *keiki*).

While the pandemic continued to challenge the delivery of education and health services, the HK program supported the schools by contributing to the mass COVID-19 testing events in schools (>12 000 tests) as well as performing COVID-19 testing (>7500 tests) within HK school clinics. Additional services and resources were provided through a coordinated effort between DOE, HK, and community partners throughout the state. These additional services included vision screening, hearing screening, dental screening and sealant application, and CPR training. HK nurses also served as clinical preceptors for 28 NAWSON nursing and dental hygiene students. Four HK APRNs (NPs) also successfully completed their Doctorate in
Nursing Practice degrees from NAWSON and 1 HK APRN (NP) completed a postdoctoral fellowship in evidence-based practice; these nurses with advanced degrees/fellowships will contribute to the excellence of HK clinical practice as well as innovative programming and outcome measurement within the HK program.

Moving Forward

To expand the scope of services throughout the state, HK plans to provide access to telehealth equipment to all RNs, allowing for virtual visits with an HK APRN (NP) as necessary. The telehealth equipment are portable virtual units that will be utilized if and when there is a student with an identified need and/or barriers to accessing other primary care services are noted. The program will also expand existing mental and behavioral health services by hiring 2 additional PMHNPs. These PMHNPs will provide telehealth services to students across the state as well as be available for consulting services to all HK nurses and other DOE staff as needed. In addition to the traditional clinic and telehealth services, the DOE has also provided funding to support each school (257) with a school health support staff. These staff, qualified as a medical assistant, certified nursing assistant, or community health worker, are being trained to help with managing the DOH COVID-19 screening and testing that is available for students and staff. These positions are essential to the ongoing functioning of the schools, plus will allow for the expansion of in-school COVID-19 testing that can help to mitigate virus spread in schools and at home, while also minimizing absences.

The COVID-19 pandemic, while very challenging for most people, has resulted in a greater appreciation for the importance of school nurses and services that promote student wellbeing. The pandemic has forever changed the delivery of health care, and HK nurses have adapted to meet the needs of the school community. Current programming and expansion efforts have made a tremendous impact, but more nurses are needed to achieve the HK goals and the AAP goal of 1 nurse per school. Both the Hawai’i DOE and DOH have identified HK as a critical link to keeping keiki healthy and schools open. They have recognized that increasing the number of HK nurses and staff is essential for the current and future health of the state’s children. Over the past 7 years, the partnership between DOE and HK has grown into a true collaboration that has provided robust services for the students and the larger school-based community. Increasing access to health care in the school-based setting reduces barriers to care, increases access to important services for youth at risk, decrease the time parents have to take off from work to obtain care for dependents, and decreases absenteeism/student’s time away from school. Keeping students healthy also improves the well-being of our larger communities.

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References
Style Guide for the Use of Native Hawaiian Words and Diacritical Markings

The HJH&SW encourages authors to use the appropriate diacritical markings (the 'okina and the kahakō) for all Hawaiian words. We recommend verifying words with the Hawaiian Language Dictionary (http://www.wehewehe.org/) or with the University of Hawaiʻi Hawaiian Language Online (http://www.hawaii.edu/site/info/diacritics.php).

Authors should also note that Hawaiian refers to people of Native Hawaiian descent. People who live in Hawaiʻi are referred to as Hawaiʻi residents.

Hawaiian words that are not proper nouns (such as keiki and kūpuna) should be written in italics throughout the manuscript, and a definition should be provided in parentheses the first time the word is used in the manuscript.

Examples of Hawaiian words that may appear in the HJH&SW:

- ‘āina
- ali‘i
- Hawai‘i
- kūpuna
- Kaua‘i
- Lāna‘i
- Mānoa
- Māori
- Moloka‘i
- O‘ahu
- ‘ohana
- Wai‘anae
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