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Use of ICD-10 Codes for Human Trafficking: Analysis of Data From a Large, Multisite Clinical Database in the United States

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Abstract

Objectives: People experiencing trafficking often seek health care but are not identified. Although the Centers for Disease Control and Prevention added new *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM) codes specific to human trafficking (hereinafter, HT ICD-10-CM codes) that could systematize the identification and documentation of human trafficking in US health care settings, the extent of their use is unknown. The objectives of this study were to investigate (1) the frequency of HT ICD-10-CM code use in US health care organizations (HCOs) and (2) demographic data associated with HT ICD-10-CM codes using a large clinical database.

Methods: This retrospective study used deidentified data collected from October 1, 2018, through March 30, 2021, from a clinical database (N = 69 740 144 patients) network (TriNetX) of 48 collaborating US HCOs. Data included number of patients with ≥1 HT ICD-10-CM code, diagnoses, and demographic characteristics (age, sex, race, ethnicity, and region).

Results: HT ICD-10-CM codes were associated with 298 patients in US HCOs, most of whom were young (mean [SD] age, 26 [16] y), White (53.0%; n = 158), and female (87.9%; n = 262). Thirty-seven of 48 (77.1%) participating HCOs used ≥1 HT ICD-10-CM code. The most frequently used HT ICD-10-CM codes were "forced sexual exploitation, suspected" (32.2%; n = 96) and "personal history of forced labor or sexual exploitation" (27.1%; n = 81). Labor trafficking codes were noted in approximately 3.7% of cases.

Conclusions: HT ICD-10-CM codes are being used by health care professionals, as confirmed by large databases. Further research is needed to understand variation in code use and risk factors associated with human trafficking.

Keywords

human trafficking, clinical data, ICD-10, health care

Despite a decades-long call to frame human trafficking as a public health problem, a public health framework for responding to and preventing human trafficking is relatively new.[1,2] This advance in our conceptualization of contributing factors, interventions, and preventive measures for human trafficking is due in large part to the myriad adverse health consequences of human trafficking.[1] People who have experienced trafficking frequently report seeking health care services while being trafficked, with rates ranging from 68% to 88%.[3,4] Thus, health care settings are a critical frontline for the identification of people experiencing trafficking. However, research also indicates that many people experiencing trafficking are not identified when seeking health care.[3,4]

In addition to being key places for helping people who are experiencing trafficking, health care settings can be important sources of data on human trafficking activity and the health consequences for people who are being trafficked. A systematic approach to identifying and documenting people who have experienced any form of violence deemed a serious public health problem, including human trafficking, is necessary. Using existing classification and documentation systems could circumvent barriers associated with the implementation and dissemination of a new system.

The *International Classification of Diseases, 10th Revision, Clinical Modification* (ICD-10-CM)[5] can be leveraged for these purposes. In 2018, in response to recommendations from experts in human trafficking in the health care field,[6,7] the

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Centers for Disease Control and Prevention amended the ICD-10-CM to include several new codes related to human trafficking (hereinafter, HT ICD-10-CM codes).[8] These codes are a first attempt to systematize the way in which human trafficking is documented in health care settings in the United States. Similar codes are under consideration by the World Health Organization for inclusion in the *International Classification of Diseases, 11th Revision* (ICD-11).[9]

A precedent exists for this approach. In the past 2 decades, ICD codes have been created for multiple forms of interpersonal violence (IPV), including child abuse, elder abuse, and domestic violence. Implementation of ICD codes for each form of IPV has been advocated based on the proposed benefits of doing so, including continuity of care specific to IPV, identification and provision of resources related to IPV, documentation and evidence of IPV for legal purposes, better understanding of the risks and consequences of IPV, and identification of the health care needs of people experiencing IPV. Despite the proposed benefits of ICD codes for IPV, the uptake of these new codes has been gradual, potentially because of variable utility and reliability.[10-16]

Recent research indicates the potential value of both HT ICD-10-CM codes and the use of clinical datasets in studies on human trafficking.[17] In their absence, a 2016 study of electronic medical record data from a large multistate health care system was unable to identify any parameters that clearly identified patients who were likely to have been trafficked.[17] While data mining may be useful for some purposes, a more intentional and direct approach may be needed for human trafficking.

Postimplementation monitoring and evaluation is necessary to measure the utilization of the codes. The use of diagnostic codes is not tantamount to prevalence or incidence estimates but may reflect improved identification of human trafficking by health care professionals. As Farrell and de Vries noted,[18] a systematic methodology using consistent human trafficking definitions is needed to accurately estimate the prevalence and incidence. In addition, health care–based identification of people experiencing trafficking is a critical first step in addressing their health care needs.

Large clinical databases represent 1 data source for empirical investigations. The TriNetX Research Network (Cambridge, MA)[19] is a multisite database that has an international portfolio of contributing health care organizations (HCOs), 48 of which are in the United States and were used in our study. This database has demonstrated utility for clinical research (eg, Topaloglu and Palchuk[20]). However, to our knowledge, no investigations of the frequency of HT ICD-10-CM code use or studies using the TriNetX database for this purpose have been published.

The objectives of this investigation were (1) to determine the initial postimplementation frequency of use of HT ICD-10-CM codes in the United States and (2) to provide initial demographic data on people identified as having experienced trafficking in the United States. These preliminary data may help to determine the utility of the TriNetX database for future research on human trafficking in US health care settings.

Methods

We examined data on all HT ICD-10-CM codes entered into the TriNetX database. We extracted deidentified data if they met the following inclusion criteria: (1) the HCO was located in the United States and (2) data were entered from October 1, 2018, through March 31, 2021. The institutional review board at Charleston Area Medical Center/West Virginia University–Charleston Campus reviewed the protocol for this study and granted a non–human subjects waiver.

Using the TriNetX query builder, we identified clinical encounters for which health trafficking–related codes were rendered. We subsequently used the query builder to identify demographic characteristics of the sample and data related to common comorbid diagnoses and procedures during clinical encounters. The query-building program in TriNetX allowed for the determination of the total number of patients for whom ≥1 HT ICD-10-CM code was used.

The deidentification and query methodology of the TriNetX database does not permit identification of HCOs, HCO types, or specific locations. However, HCOs are classified in broad regional categories including the following: Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont), Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin), South (Alabama, Arkansas, Delaware, Florida, Georgia, Oklahoma, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Texas, Tennessee, Virginia, West Virginia), and West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming). Therefore, we conducted queries based on the region of US HCOs.

We extracted data for broad categories of HT ICD-10-CM codes (eg, forced sexual exploitation, confirmed [T74.5]; Table 1). Further queries were built, and data were extracted for subcategories (eg, adult forced sexual exploitation, suspected [T76.51]; adult forced sexual exploitation, confirmed [T74.51]) and second-order subcategories (eg, child forced labor exploitation, confirmed, initial encounter [T74.62XA]; child forced labor exploitation, confirmed, sequela [T74.52XS]; Table 2) to better characterize the full extent of code use.

To provide a general overview of the pattern of HT ICD-10-CM code use, we calculated the mean monthly number of patients to whom HT ICD-10-CM codes were applied per quarter from October 1, 2018, through March 31, 2021; the mean per-quarter change from baseline quarter (ie, the number of patients with HT ICD-10-CM codes per month across all HCOs was used to generate a quarterly average); and the mean change per quarter across time (mean quarter-to-quarter increase/decrease among patients with HT ICD-10-CM codes).

Table 1. Frequency of ICD-10-CM codes related to sex trafficking associated with patients (n = 298) at 44 health care organizations, United States, October 1, 2018–March 31, 2021[a]

ICD-10-CM code[b]	Description	No. (%)
T74.5	Forced sexual exploitation, confirmed	63 (21.1)
T74.51	Adult forced sexual exploitation, confirmed	27 (9.1)
T74.52	Child sexual exploitation, confirmed	36 (12.1)
T74.51XS	Adult forced sexual exploitation, confirmed, sequela	0
T74.52XS	Child sexual exploitation, confirmed, sequela	10 (0.3)
T74.51XA	Adult forced sexual exploitation, confirmed, initial encounter	25 (8.4)
T74.52XA	Child sexual exploitation, confirmed, initial encounter	32 (10.7)
T74.51XD	Adult forced sexual exploitation, confirmed, subsequent encounter	10 (0.3)
T74.52XD	Child sexual exploitation, confirmed, subsequent encounter	10 (0.3)
T76.5	Forced sexual exploitation, suspected	96 (32.2)
T76.51	Adult forced sexual exploitation, suspected	45 (15.1)
T76.52	Child sexual exploitation, suspected	51 (17.1)
T76.51XA	Adult forced sexual exploitation, suspected, initial encounter	44 (14.8)
T76.52XA	Child sexual exploitation, suspected, initial encounter	46 (15.4)
T76.51XD	Adult forced sexual exploitation, suspected, subsequent encounter	10 (0.3)
T76.52XD	Child sexual exploitation, suspected, subsequent encounter	10 (0.3)
T76.51XS	Adult forced sexual exploitation, suspected, sequelae	0
T76.52XS	Child sexual exploitation, suspected, sequelae	10 (0.3)
Z91.42	Personal history of forced labor or sexual exploitation	81 (27.1)
Z62.813	Personal history of forced labor or sexual exploitation in childhood	70 (23.5)

Abbreviation: ICD-10-CM, *International Classification of Diseases, Tenth Revision, Clinical Modification*.
[a]Of 69 740 144 total patients in the TriNetX database for whom data were available, 298 patients were associated with trafficking. Data source: TriNetX.[19]
[b]Data source: Centers for Disease Control and Prevention.[5]

The TriNetX database does not include nonbinary or gender nonconforming identity data. It also does not identify transgender individuals (ie, those whose sex assigned at birth is different from their gender identity). Therefore, diagnoses of gender identity disorder (ie, gender dysphoria) were used as a proxy indicator, although valid criticisms have been raised about the potential harms caused by both terms. Deidentification procedures for the TriNetX database (specifically, automatic rounding up of numerators and denominators for smaller subsamples) precluded accurate analyses of racial categories for labor trafficking. However, we estimated proportions for sex, race, and ethnicity for patients for whom ICD-10-CM codes related to sex trafficking were rendered.

This investigation was an exploratory pilot study with a primary objective of examining initial postimplementation use of HT ICD-10-CM codes. The nascent stage of this system for capturing clinical data on patients experiencing trafficking precluded hypothesis testing. Therefore, only descriptive statistical analyses were conducted.

Data analyses pertaining to the frequency of HT ICD-10-CM code use, comorbid diagnoses (ie, other ICD-10-CM codes), demographic variables, regional frequencies, and HCOs with ≥1 case of human trafficking were conducted within the TriNetX platform. We analyzed data on quarterly cases of human trafficking in HCOs to identify the overall percentage-point change from baseline and mean changes in the number of cases over time using SPSS version 26 (IBM Corp).

Results

Sample: Patients and HCOs

Data were available for 69 740 144 patients and 44 HCOs in the TriNetX database. Most participating HCOs (84.1%; n = 37) used ≥1 HT ICD-10-CM code. The largest proportion of patients (N = 298) with HT ICD-10-CM codes were in the South (40.9%; n = 122), followed by the Midwest (30.2%; n = 90), West (9.7%; n = 29), and Northeast (9.4%; n = 28). Twenty-nine (9.7%) HT ICD-10-CM codes were used in an unknown or unspecified region.

Across all regions and quarters, the mean quarterly number of patients to whom HT ICD-10-CM codes were applied was 9.0. The mean increase from October 1, 2018 (baseline), until March 31, 2021, was 1.9 patients per month per quarter, and the mean month-to-month increase was 0.3 patients (Figure).

HT ICD-10-CM codes were associated with 298 patients. Patients associated with these encounters ranged in age from <1 to 90 years, with a mean (SD) age of 26 (16) years. The mean age of patients with any sex trafficking code (n = 288)

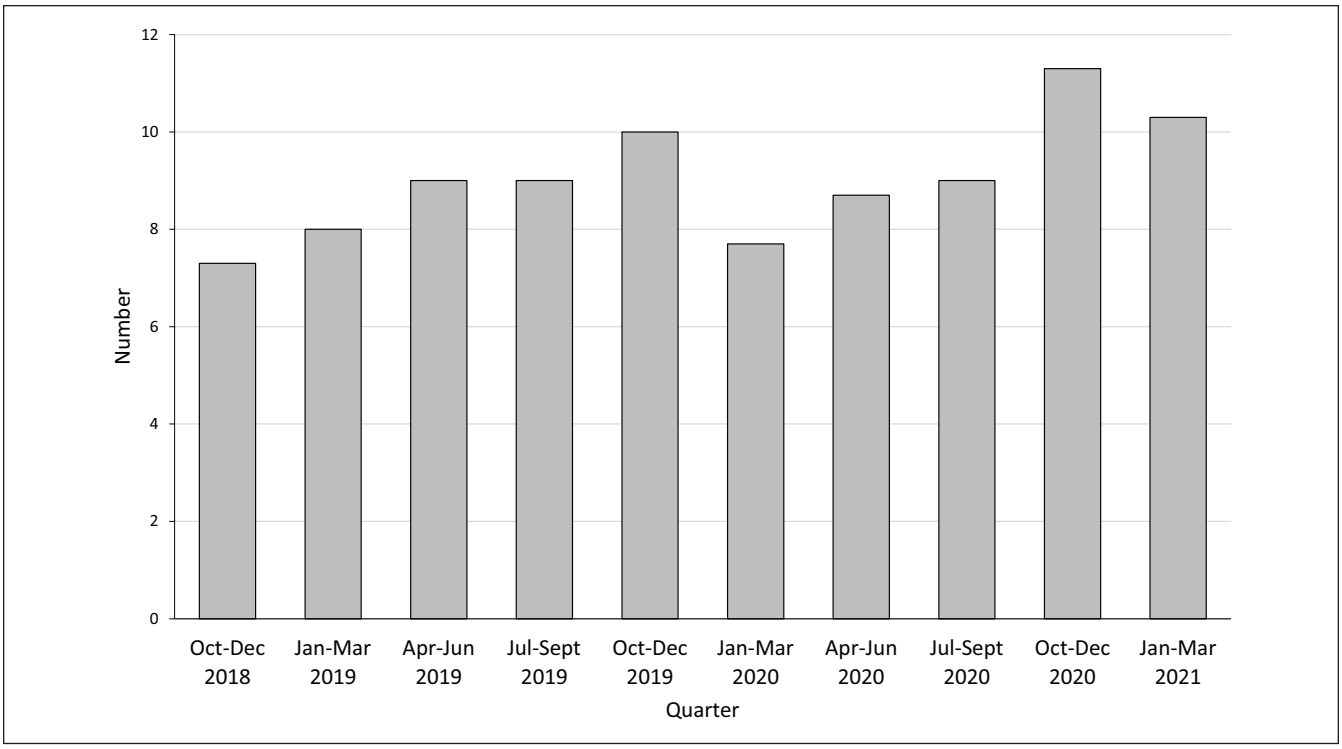

Figure. Mean number of patients at health care organizations (n = 44) with ICD-10-CM codes for human trafficking, by quarter, United States, October 1, 2018–March 30, 2021. Abbreviation: ICD-10-CM, *International Classification of Diseases, 10th Revision, Clinical Modification*. Data sources: TriNetX[19] and Centers for Disease Control and Prevention.[5]

was 25 years, and the mean age of patients with any labor trafficking code (n = 10) was 38 years. About half (53.0%; n = 158) of patients were White, 28.2% (n = 84) were Black/African American, 12.1% (n = 36) were Hispanic/Latinx, 3.0% (n = 9) were Asian, 3.0% (n = 9) were American Indian/Alaska Native, and 15.1% (n = 45) had unknown race and ethnicity. Most patients (87.9%; n = 262) were female. Ten patients (3.4%) with a code for sex trafficking and 0 patients with a code for labor trafficking also had a diagnosis of gender identity disorder (our proxy measure of identifying as transgender for this study).

ICD-10-CM Codes for Human Trafficking

The most frequently used HT ICD-10-CM codes were related to suspected/unconfirmed sex trafficking and personal history of being trafficked, with the most frequently used codes being "forced sexual exploitation, suspected" (32.2%; n = 96), followed by "personal history of forced labor or sexual exploitation" (Z91.42; 27.1%; n = 81), "personal history of forced labor or sexual exploitation in childhood" (Z62.813; 23.5%; n = 70), and "forced sexual exploitation, confirmed" (T74.5; 21.1%; n = 63; Table 1).

Labor trafficking codes ("forced labor exploitation") were used less frequently than sex trafficking codes. Codes for suspected and confirmed labor trafficking were applied to 10 patients (3.4%) each, for children and adults (10 and 10, respectively; Table 2).

Diagnoses Associated With Human Trafficking

Of the 298 patients with ≥1 HT ICD-10-CM code, headache (25.2%; n = 75) and fatigue (11.4%; n = 34) were the most commonly reported symptoms. One hundred seventy (57.0%) patients with HT ICD-10-CM codes also had codes for digestive symptoms (R10-R19) and respiratory and circulatory symptoms (R00-R09; 51.3%; n = 157). Two hundred eight (69.8%) patients had codes related to psychiatric symptoms (F01-F99), predominantly major depressive disorder (51.7%; n = 154) and anxiety disorders (43.0%; n = 128). Approximately one-third (33.2%; n = 99) of patients had a comorbid diagnosis of posttraumatic stress disorder (PTSD). In addition, 28.2% (n = 84) of patients had codes for suicidal ideation, and 5.0% (n = 15) had codes for homicidal ideation.

Finally, 46.3% (n = 138) of patients with HT ICD-10-CM codes also had a substance use disorder code, most commonly nicotine (30.9%; n = 92) and cannabis (22.5%; n = 67), followed by cocaine (15.1%; n = 45), opioids (14.4%; n = 43), and alcohol (12.4%; n = 37). Among patients with codes for opioid use, 28 (65.1%) were associated with opioid dependence, although this group of patients comprised a

Table 2. Frequency of ICD-10-CM codes related to labor trafficking associated with patients (n = 298) at 44 health care organizations, United States, October 1, 2018–March 31, 2021[a]

ICD-10-CM code[b]	Description	No. (%)
T74.6	Forced labor exploitation, confirmed	11 (3.7)
T74.61	Adult forced labor exploitation, confirmed	10 (3.4)
T74.62	Child forced labor exploitation, confirmed	10 (3.4)
T74.51XS	Adult forced labor exploitation, confirmed, sequela	10 (3.4)
T74.52XS	Child forced labor exploitation, confirmed, sequela	10 (3.4)
T74.61XA	Adult forced labor exploitation, confirmed, initial encounter	10 (3.4)
T74.62XA	Child forced labor exploitation, confirmed, initial encounter	0
T74.61XD	Adult forced labor exploitation, confirmed, subsequent encounter	0
T74.62XD	Child forced labor exploitation, confirmed, subsequent encounter	0
T76.6	Forced labor exploitation, suspected	10 (3.4)
T76.61	Adult forced labor exploitation, suspected	10 (3.4)
T76.62	Child forced labor exploitation, suspected	10 (3.4)
T76.61XA	Adult forced labor exploitation, suspected, initial encounter	10 (3.4)
T76.62XA	Child forced labor exploitation, suspected, initial encounter	10 (3.4)
T76.61XD	Adult forced labor exploitation, suspected, subsequent encounter	0
T76.62XD	Child forced labor exploitation, suspected, subsequent encounter	10 (3.4)
T76.61XS	Adult forced labor exploitation, suspected, sequelae	0
T76.62XS	Child forced labor exploitation, suspected, sequelae	0

Abbreviation: ICD-10-CM, *International Classification of Diseases, 10th Revision, Clinical Modification*.
[a]Of 69 740 144 total patients in the TriNetX database for whom data were available, 298 patients were associated with trafficking. Data source: TriNetX.[19]
[b]Data source: Centers for Disease Control and Prevention.[5]

small proportion (9.4%) of patients with HT ICD-10-CM codes overall. In contrast, among 37 patients with codes for alcohol use disorder, 45.9% (n = 17) were diagnosed with alcohol dependence (5.7% of the overall sample). Fifteen of 45 (33.3%) patients with cocaine use disorder (and 5.0% of the total sample) were diagnosed with cocaine dependence.

Discussion

Human trafficking is a public health problem with relevance to multiple aspects of health care. The potential value of HT ICD-9-CM codes is articulated in the literature. However, any utility lies primarily in use. To our knowledge, this study provides the first known data on the use of the new HT ICD-10-CM codes.

These initial data are encouraging and concerning. First, that 77% of HCOs in this study had identified ≥1 human trafficking case is a desirable outcome of the initiative to increase identification of trafficked people seeking health care services. No a priori reason exists that these HCOs were unique in their ability to identify people who have been trafficked, which may suggest that use of these codes has gained some traction in health care. However, unique features of these HCOs may predispose them to better identification. The deidentification methodology of TriNetX does not permit an analysis of unique features at the organization level, thus obscuring facilitators and barriers to identification.

Simultaneously, the overall rate of identification (298 patients during approximately 2½ years) was low. By comparison, data from the National Human Trafficking Resource Center hotline identified 22 326 people who were likely being trafficked in 2019 alone.[21] Considering this volume of likely human trafficking cases nationwide and the proportion of people who have been trafficked who report seeking health care services noted previously, the data in our study suggest that many cases of human trafficking are being missed. Further data collection may improve our understanding of the extent to which people who are trafficked and seek health care are identified.

These data were generally consistent with research that found diverse psychiatric symptoms in people experiencing trafficking. However, our data reflected a lower prevalence of psychiatric symptoms among these patients than in previous research. For example, Hopper and Gonzalez[22] found rates of 71% for depression and 61% for PTSD in their sample (N = 131). Nonetheless, the data in our study match the overall pattern of results found in systematic reviews by Oram et al[23] and Ottisova et al.[24]

Another finding of our study was the discrepancy between the use of labor trafficking codes and sex trafficking codes. Of the 298 patients for whom ≥1 HT ICD-10-CM code was rendered, only 11 (<4%) were for labor trafficking. This disparity aligns with the overemphasis on sex trafficking noted in previous literature.[25-27]

One challenge that our data highlight is the underidentification by health care professionals of people experiencing trafficking, which raises critical questions for future studies.

For example, why and when do health care professionals screen for and identify human trafficking, and what kinds of barriers exist for screening and identification?

As noted by Katsanis et al,[17] multiple reasons explain why someone being trafficked may not be identified during a health care encounter. First, health care professionals must be aware and have some understanding of human trafficking, including the indicators that a patient may be trafficked. This awareness and understanding requires health care professionals to be cognizant of their own biases about who may or may not be trafficked and to circumvent these biases during clinical encounters. Many biases are implicit. Research indicates that implicit biases are malleable, but changing them requires exposure to bias-contradictory information.[28,29] Variations of legal definitions of human trafficking by state may also contribute to health care professionals' misunderstanding of human trafficking.[17] Finally, media misrepresentations of human trafficking may perpetuate biases and misunderstanding of people who are trafficked.[25-27] For example, the ongoing disproportionate focus on women and girls who are trafficked for sex further entrenches pervasive "perfect victim" stereotypes and narratives.[30] These stereotyped narratives are inconsistent with the lived experiences of many people experiencing trafficking and create barriers to their identification, further skewing who is identified and solidifying those biases.

The availability and use of diagnostic codes for human trafficking is insufficient to improve identification of and response to patients who are being trafficked. More widespread training of health care professionals in the identification of and response to people experiencing trafficking is a critical first step, which might be approached through required continuing education related to trafficking by state licensing boards. Moreover, these data point toward the need for core competencies in human trafficking for health care professionals.

In this vein, professional organizations must develop evidence-based core competency standards for human trafficking identification and response that prioritize accurate representations of human trafficking. Organizational positions and resolutions that (1) include all forms of trafficking, (2) include all people experiencing trafficking, and (3) promote the dissemination of accurate information about trafficking are essential. Positions of the American College of Emergency Physicians[31] and the American Psychiatric Association[32] are models to which organizations may aspire. Conversely, positions that may perpetuate biases (eg, by focusing selectively on only some forms of trafficking or only 1 subset of people who are trafficked[33]) should be avoided.

Overall, our data align with other data on the use of ICD codes for IPV, which have demonstrated limited initial uptake. For example, Karetekin et al[11] found a child maltreatment prevalence of 0.02% based on ICD code use in their study of 2.5 million young people in Minnesota, which differs substantially from the self-reported rate found in prior research. Similarly, Olive[12] noted a slow and inconsistent uptake in the use of ICD codes for domestic violence, which may be attributable to a baseline underestimate of IPV that may lead to missing cases.[14]

A lack of reliable data is a well-known problem in human trafficking research. Nonetheless, our findings of a disproportionately higher use of codes for sex trafficking (96.3%) than labor trafficking are generally consistent with findings by Anderson et al[34] (86.8% sex trafficking cases in Ohio during 2014-2018) but differ from findings by Busch-Armendariz et al[35] in Texas (25.2% for sex trafficking cases). The racial and ethnic diversity in our sample was consistent with Anderson et al: 57.6% White, 35.4% Black, and 7.6% Hispanic/Latinx.[34]

Strengths and Limitations

This study had several strengths. First, our design included a diverse representation of HCOs in the United States, with a relatively racially and ethnically diverse sample. Second, our data provided a cross-sectional view of the initial use of HT ICD-10-CM codes by leveraging a clinical database. Although preliminary, these data are an important first step in examining the pattern of HT ICD-10-CM code use.

This study also had several limitations. First, like all clinical data, variation in diagnostic method and accuracy across settings and clinicians likely exists and may partially account for the ways in which our findings differed from previous research. Indeed, clinical datasets comprise a heterogeneous set of data sources, the quality of which may differ greatly (ie, the "garbage in, garbage out" problem). Standardizing and systematizing human trafficking screening methodology across health care settings may be one solution to this problem.

Second, the overall sample of patients in our study with human trafficking–related codes was small and underpowered for meaningful univariate or multivariate analyses to be conducted. Future research must be conducted at a time when adequate power can be attained for such analyses. Quasi-experimental methodologies (eg, propensity score matching) may elucidate the health care needs and disparities of people being trafficked and clarify patterns of clinical presentations that would better identify human trafficking.

Third, our study had limitations related to data sourcing. One such limitation was the combination of diverse data sources with de-dentification, which precluded generalizing these findings to specific health care settings. Another limitation was that the data were focused on US HCOs, which precluded including other forms of trafficking recognized globally (eg, organ trafficking, forced marriage, state-imposed labor). Systemic factors limited our ability to consider this full range of trafficking: child marriage remains legal throughout most of the United States,[36,37] organ trafficking is not included in federal human trafficking law or ICD-10-CM codes,[38] and forced labor of people who are incarcerated is legal in the United States.[39,40]

A final limitation was the inapplicability of these data to human trafficking prevalence estimates. These data may

reflect the limited awareness of trafficking among health care professionals rather than the prevalence of trafficking in health care settings. People experiencing trafficking who seek health care will be identified only when health care professionals take steps to do so, and this will happen only with awareness of human trafficking. However, "awareness" necessitates an accurate representation of the full range of human trafficking types and the diversity of people who are trafficked. The recent development of human trafficking core competencies is a vital step toward systematically disseminating consistent information about trafficking. In addition, recent licensure board mandates for human trafficking continuing medical education enacted in some states (eg, Florida,[41] Michigan,[42] Texas[43]) may increase awareness.

The data from our study must also be considered within the broader context of HT ICD-10-CM code implementation. These codes can represent an advent for the intersection of health care and human trafficking.[44] However, using any new system requires education. Some clinicians report hesitance to render diagnostic codes they feel inadequately qualified to assess (eg, physical trauma vs child maltreatment[45]), and this hesitancy may apply to human trafficking as well. Announcements of the new codes were made via press releases; however, dissemination of training on the use of HT ICD-10-CM codes is needed. Lack of training may have contributed to the low rate of HT ICD-10-CM code use in our study.

Conclusions

Since the introduction of ICD-10-CM codes specific to human trafficking in 2018, evidence suggests that these codes are being used in health care settings. People who have experienced trafficking are diverse clinically, demographically, and psychosocially. These patients present with a range of medical comorbidities, including fatigue, headache, depression, anxiety, PTSD, and substance use disorders. Despite the evidence that these new ICD-10-CM codes are being used, additional initiatives are needed to advance the public health response to human trafficking. Continued collection of data during longer periods and from more diverse sources is also needed.

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References

1. Chisolm-Straker M, Stoklosa H, eds. *Human Trafficking Is a Public Health Issue: A Paradigm Expansion in the United States*. Springer; 2017.
2. Todres J. Moving upstream: the merits of a public health law approach to human trafficking. *NC Law Rev*. 2011;89(2):447-506.
3. Chisolm-Straker M, Baldwin S, Gaïgbé-Togbé B, Ndukwe N, Johnson PN, Richardson LD. Health care and human trafficking: we are seeing the unseen. *J Health Care Poor Underserved*. 2016;27(3):1220-1233. doi:10.1353/hpu.2016.0131
4. Lederer LJ, Wetzel CA. The health consequences of sex trafficking and their implications for identifying victims in healthcare facilities. *Ann Health L*. 2014;23(1):61-91.
5. Centers for Disease Control and Prevention. *International Classification of Diseases, Tenth Revision, Clinical Modification*. Accessed January 11, 2022. https://www.cdc.gov/nchs/icd/icd10cm.htm
6. Macias-Konstantopoulos W, Ma ZB. Physical health of human trafficking survivors: unmet essentials. In: Chisolm-Straker M, Stoklosa H, eds. *Human Trafficking Is a Public Health Issue: A Paradigm Expansion in the United States*. Springer; 2017:185-210.
7. Powell CL, Bennouna C. Sex trafficking in the USA. In: Chisolm-Straker M, Stoklosa H, eds. *Human Trafficking Is a Public Health Issue: A Paradigm Expansion in the United States*. Springer; 2017:43-66.
8. Office of Trafficking in Persons, Administration for Children and Families. CDC adds new human trafficking data collection fields for health care providers. June 14, 2018. Accessed January 9, 2022. https://healtrafficking.org/publications/cdc-adds-new-human-trafficking-data-collection-fields-for-health-care-providers
9. Greenbaum J, Stoklosa H. The healthcare response to human trafficking: a need for globally harmonized ICD codes. *PLoS Med*. 2019;16(5):e1002799. doi:1371/journal.pmed.1002799
10. Rovi S, Johnson MS. More harm than good? Diagnostic codes for child and adult abuse. *Violence Vict*. 2003;18(5):491-502. doi:10.1891/vivi.2003.18.5.491
11. Karatekin C, Almy B, Mason SM, Borowsky I, Barnes A. Documentation of child maltreatment in electronic health records. *Clin Pediatr (Phila)*. 2018;57(9):1041-1052. doi:10.1177/0009922817743571
12. Olive P. Intimate partner violence and clinical coding: issues with the use of the International Classification of Disease (ICD-10) in England. *J Health Serv Res Policy*. 2018;23(4):212-221. doi:10.1177/1355819618781413
13. Karakurt G, Patel V, Whiting K, Koyutürk M. Mining electronic health records data: domestic violence and adverse health effects. *J Fam Violence*. 2017;32(1):79-87. doi:10.1007/s10896-016-9872-5
14. Scott D, Tonmyr L, Fraser J, Walker S, McKenzie K. The utility and challenges of using ICD codes in child maltreatment research: a review of existing literature. *Child Abuse Negl*. 2009;33(11):791-808. doi:10.1016/j.chiabu.2009.08.005

15. McKenzie K, Scott DA, Waller GS, et al. Reliability of routinely collected hospital data for child maltreatment surveillance. *BMC Public Health*. 2011;11:8. doi:10.1186/1471-2458-11-8
16. McKenzie K, Scott DA. Using routinely collected hospital data for child maltreatment surveillance: issues, methods and patterns. *BMC Public Health*. 2011;11:7. doi:10.1186/1471-2458-11-7
17. Katsanis SH, Huang E, Young A, et al. Caring for trafficked and unidentified patients in the EHR shadows: shining a light by sharing the data. *PLoS One*. 2019;14(3):e0213766. doi:10.1371/journal.pone.0213766
18. Farrell A, de Vries I. Measuring the nature and prevalence of human trafficking. In: Winterdyk J, Jones J, eds. *The Palgrave International Handbook of Human Trafficking*. Palgrave MacMillan; 2020:147-162.
19. TriNetX, Inc. Real-world data. Accessed January 16, 2022. https://trinetx.com/real-world-data
20. Topaloglu U, Palchuk MB. Using a federated network of real-world data to optimize clinical trials operations. *JCO Clin Cancer Inform*. 2018;2:1-10.
21. Polaris. *2019 Data Report: The 2019 National Human Trafficking Hotline*. Published 2019. Accessed January 10, 2022. https://polarisproject.org/wp-content/uploads/2019/09/Polaris-2019-US-National-Human-Trafficking-Hotline-Data-Report.pdf
22. Hopper EK, Gonzalez LD. A comparison of psychological symptoms in survivors of sex and labor trafficking. *Behav Med*. 2018;44(3):177-188. doi:10.1080/08964289.2018.1432551
23. Oram S, Stöckl H, Busza J, Howard LM, Zimmerman C. Prevalence and risk of violence and the physical, mental, and sexual health problems associated with human trafficking: systematic review. *PLoS Med*. 2012;9(5):e1001224. doi:10.1371/journal.pmed.1001224
24. Ottisova L, Hemmings S, Howard LM, Zimmeran C, Oram S. Prevalence and risk of violence and the mental, physical and sexual health problems associated with human trafficking: an updated systematic review. *Epidemiol Psychiatr Sci*. 2016;25(4):317-341. doi:10.1017/S2045796016000135
25. Uy R. Blinded by red lights: why trafficking discourse should shift away from sex and the perfect victim paradigm. *Berkeley J Gender Law Just*. 2011;26(1):204-220. doi:10.15779/Z38QV3C34F
26. Capous Desyllas M. A critique of the global trafficking discourse and US policy. *J Sociol Soc Welfare*. 2007;34(4):57-80.
27. Kerr PL. Treating trauma in the context of human trafficking: intersections of psychological, social, and cultural factors. In: Ghafoori B, Caspi Y, Smith SS, eds. *International Perspectives on Traumatic Stress: Theory, Access, and Mental Health Services*. Nova Publishers; 2016:199-222.
28. van Ryn M, Hardeman R, Phelan SM, et al. Medical school experiences associated with change in implicit racial bias among 3547 students: a Medical Student CHANGES study report. *J Gen Intern Med*. 2015;30(12):1748-1756. doi:10.1007/s11606-015-3447-7
29. Vuletich HA, Payne BK. Stability and change in implicit bias. *Psychol Sci*. 2019;30(6):854-862. doi:10.1177/0956797619844270
30. Srikantiah J. Perfect victims and real survivors: the iconic victim in domestic human trafficking law. *Immigr Natl Law Rev*. 2007;87(1):157-211.
31. American College of Emergency Physicians. Policy statement: human trafficking. February 2020. Accessed January 10, 2022. https://www.acep.org/globalassets/new-pdfs/policy-statements/human-trafficking.pdf
32. American Psychiatric Association. Position statement on human trafficking. December 2018. Accessed January 10, 2022. https://www.psychiatry.org/File%20Library/About-APA/Organization-Documents-Policies/Policies/Position-Human-Trafficking.pdf
33. American Psychological Association, Task Force on Trafficking of Women and Girls. *Report of the Task Force on Trafficking of Women and Girls*. American Psychological Association; 2014. Accessed January 10, 2022. http://www.apa.org/pi/women/programs/trafficking/report.aspx
34. Anderson VR, Kulig TC, Sullivan CJ. Estimating the prevalence of human trafficking in Ohio, 2014-2016. *Am J Public Health*. 2019;109(10):1396-1399. doi:10.2105/AJPH.2019.305203
35. Busch-Armendariz N, Nale NL, Kammer-Kerwick M, et al. *Human Trafficking by the Numbers: The Initial Benchmark of Prevalence and Economic Impact for Texas*. Institute on Domestic Violence and Sexual Assault, University of Texas at Austin; 2016.
36. Kakar S. Child/forced/servile marriages and human trafficking. In: Winterdyk J, Jones J, eds. *The Palgrave International Handbook of Human Trafficking*. Springer; 2020:503-519.
37. Martin LV. Restraining forced marriage. *Nevada Law J*. 2018;18(3):919-1006.
38. Greenbaum J. A public health approach to global child sex trafficking. *Annu Rev Public Health*. 2020;41:481-497. doi:10.1146/annurev-publhealth-040119-094335
39. Browne J. Rooted in slavery: prison labor exploitation. *Race Poverty Environ*. 207;14(1):42-44.
40. Blackett A, Duquesnoy A. Slavery is not a metaphor: US prison labor and racial subordination through the lens of the ILO's abolition of forced labor convention. *UCLA Law Rev*. 2021;67(6):1504-1535.
41. Florida Department of Health. Human trafficking. 2019. Accessed March 4, 2022. https://www.flhealthsource.gov/humantrafficking/#home
42. Michigan Bureau of Professional Licensing. Human trafficking requirements for health professions. 2021. Accessed March 4, 2022. https://www.michigan.gov/documents/lara/HumanTraffickingRequirementsOnline4.14.21_722697_7.pdf
43. Texas Health and Human Services Commission. Health care practitioner human trafficking training. 2021. Accessed March 4, 2022. https://www.hhs.texas.gov/services/safety/texas-human-trafficking-resource-center/health-care-practitioner-human-trafficking-training
44. Macias-Konstantopoulos WL. Diagnosis codes for human trafficking can help assess incidence, risk factors, and comorbid illness and injury. *AMA J Ethics*. 2018;20(12):1143-1151. doi:10.1001/amajethics.2018.1143
45. Schnitzer PG, Slusher P, Van Tuinen M. Child maltreatment in Missouri: combining data for public health surveillance. *Am J Prev Med*. 2004;27(5):379-384. doi:10.1016/j.amepre.2004.08.007