“This Terrible Sickness”: Perceptions of Health in the Warsaw Ghetto and Implications for Contemporary Praxis in Low-Resource, Highly-Stigmatized Communities

By

Bailee Wilson

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thesis requirements for the degree of Master of Public Health.

Date _____ _____
Stacey Springs, PhD, Advisor

Date _____ _____
Annie Gjelsvik, PhD, Reader

Date _____ _____
Annie Gjelsvik, PhD
Director, Master of Public Health Program

Approved by the Graduate Council

Date _____ _____
Thomas A. Lewis, Dean of the Graduate School

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Introduction

The ghettoization of Jews during the Holocaust created a public health crisis of which there has been little study, leading to a gap in our understanding of this momentous issue. Holocaust ghettos were defined by disease, starvation, poor sanitation, abuse, and death, yet insufficient research has been conducted to chronicle health in the ghettos. It is vital that we begin to devote resources to studying health policies, behaviors, and systems within Holocaust ghettos. Holocaust study demands a place in public health research. Public health professionals must be aware of past system failures in order to operate helpfully and ethically today, and looking at the Holocaust through a public health lens will help prevent many of the same system failures from occurring in the future.

This novel qualitative study begins to fill the gap in public health literature by analyzing Holocaust survivors' oral histories in order to understand how former Warsaw Ghetto residents perceived health care accessibility and utility within the ghetto during World War II. Emphasis is placed on how residents' discussions of health care experiences reflect the health information that was circulated in the ghetto, with the goal of identifying contemporary applications for findings. Understanding the modes and impacts of information spread can help us trace how health services are interpreted, utilized, and discussed in refugee camps and communities, carceral institutions, and other highly-impoverished, highly-stigmatized communities.

Historical Context

Public Health Practices in Jewish Communities Before World War II

In the early 1900s, the eugenics and racial hygiene movements gained popularity in Germany and began to seep into German public health.[1-2] These movements targeted Jewish

populations as sources of disease, despite the fact that European Jews remained healthier than other populations and Jewish communities had access to extensive public health systems.[1] Jewish doctors, who had previously been highly respected throughout Europe, had to overcome massive barriers in order to practice medicine at this time.[1] They were only allowed to practice in limited fields, and they were often forced to convert in order to join university medical faculties.[3] Still, Jewish physicians persisted in providing care to their communities. Despite working hard to overcome obstacles so that they could provide health services and community aid, Jewish medical personnel were forced out of public health systems in 1933.[1] This changed the landscape of care, making it difficult for Jewish populations to receive the health services that they were accustomed to receiving.[1]

Onset of World War II and Jewish Segregation into Ghettos

In September of 1939, German forces infamously invaded Poland, initiating World War II.[4] Warsaw, the largest city in Poland, was decimated by warfare and was seized within a month of the invasion.[4] Following the city's capture, German administrators established a *Judenrat*, which was an administrative council consisting of Jews who were either appointed by Nazi officials or elected by fellow residents, to oversee the city's massive Jewish population.[1,4-5] The stigmatization and exclusion of the community accelerated from this point forward. In November of 1939, Hans Frank, the Governor General of German-occupied Poland, decreed that all Jews under his jurisdiction were to identify themselves by wearing white armbands with a blue Star of David.[4] Jewish schools began to close, Jewish property was confiscated, and Jewish men were conscripted into the labor force.[4] Then, in 1940, German authorities started isolating Jewish populations within ghettos.[4] These ghettos included open ghettos, which were directly open to the community they were located in but had restrictions on entry and exit; closed ghettos, which

were cut off from their communities by walls or fences; and destruction ghettos, which were tightly sealed and only existed for weeks at a time before residents were deported or executed.[6]

The ghettoization of the Jews was justified by the German government, in part, through the spread of anti-semetic health misinformation, including propaganda that declared the Jews responsible for the spread of typhus and other diseases.[7] The first partially closed ghettos, in which Jewish populations were concentrated in one small, segregated, and easily overseeable area, were born of the falsified political argument that the isolation of the Jews would protect the rest of the population by reducing the spread of disease.[8-9] By the end of World War II, there were at least 1,143 ghettos in occupied Eastern territories.[8] In the Warsaw Ghetto, approximately 400,000 Jews resided within only 1.3 square miles of the city.[4] This was approximately 30% of Warsaw's total population.[4] Other major Polish ghettos, including Łódź and Kraków, were of similar population densities.[8]

Each of the major ghettos were governed by *Judenräte,* which were responsible for carrying out German orders, taking censuses of ghetto residents, and overseeing the ghettos.[1,5] Members of *Judenräte* were typically elite members of the community.[5] While they were involved in instituting many beneficial and life-saving programs, they were also frequently faced with immense moral dilemmas, including making decisions about deportations to concentration camps and enforcing harmful Nazi laws, making them a highly controversial topic.[5] *Judenrat* actions dictated everything from living arrangements to health service provisions to deportations.[5]

Provision of Medical Care and Public Health Systems in Ghettos

Some ghettos managed to provide formalized health services to residents. Within the ghetto in Łódź, Poland, there were five hospitals available to residents, which operated until

1942.[1] In Vilna, Poland, there was a Jewish hospital staffed by 152 health providers that excelled at providing outpatient clinic visits, house calls, emergency services, and minor medical procedures during the lifetime of the ghetto.[1] The Warsaw Ghetto *Judenrat* attempted to improve health conditions by forming a health department.[1] Due to their lack of infrastructure, the department was not successful in making a noticeable change in health outcomes, apart from reducing the rate of typhus infection.[1] As part of this study, the review of records revealed no obvious reference to this institution in any of the survivor testimonies, so it is doubtful that most residents were aware of the health department's existence.

Using Oral Histories as Public Health Data - A Case Study on Typhus in the Warsaw Ghetto

Food scarcity, poor sanitation, overcrowding, and other issues led to poor health outcomes in the Warsaw Ghetto. One of the most pressing consequences of the poor living conditions was the outbreak of a typhus epidemic. In the Warsaw Ghetto, there were two notable typhus outbreaks- one small outbreak, which developed following population displacement in September 1939 and lasted through the winter, followed by a second major outbreak, which began following the closing of the ghetto in November 1940 and lasted until the liquidation of the ghetto in July 1942.[9] A minimum of 20% of ghetto residents became infected with typhus while residing in the ghetto.[9] The underreporting of typhus symptoms and low rate of diagnosis is attributed to the perceived risk of death, deportation, or other punitive measures that accompanied diagnosis.[9] Based on the epidemiological data that is available, it is estimated that the combined effects of starvation and typhus resulted in approximately 100,000 deaths in the Warsaw Ghetto between 1941 and 1942.[9]

A highly-publicized public health campaign organized by the *Judenrat* and executed by resident public health workers may have had some efficacy in reducing typhus infection, but the oral histories included in the sample for this study do not acknowledge this campaign.[9-10] Despite academia's suggestion that typhus prevention programs were effective, this evidence appears to neglect the lived experience of Warsaw ghetto residents, overlooking their interactions with and perceptions of the campaigns. Existing research on the efficacy of the typhus prevention program in the Warsaw Ghetto is based on historical documents and written materials created by elite administrators and health workers and does not consider the narratives of average residents.[9-10]

A key component to the development and implementation of contemporary public health interventions is soliciting feedback from participants (e.g., feasibility and acceptability testing, survey data or qualitative research as part of post-intervention evaluation). The absence of Warsaw Ghetto resident experiences in the public health record has consequences for our perceptions of the efficacy of the public health interventions on typhus. Reliance on historic public health records generated by a political entity that violated the human rights of a community and actively diminish and limit the accounts of the oppressed amounts, at minimum, introduces significant bias into our understanding of the public health issues of the time, and in practice, promotes the uptake and dissemination of biased evidence to inform practice. Thus, the use of oral histories as public health data is a critical step in ensuring the voices of those with lived experiences are not just remembered, but honored through the promotion of improved public health practices.

In the case of the typhus outbreak, this study revealed that, in the sample of oral histories that included reference to public health, *Judenrat* programming on typhus was not discussed outside of vague references to preventative measure enforcement. It is possible that residents'

lived experiences differed from what was recorded by officials, that health information was not disseminated in a way that was understandable for public audiences, or that some other rift between health providers and ghetto residents existed that led to differential understanding and perception of health experiences. The lack of homogeneity across documented and lived experiences further emphasizes the importance of research on health in the Warsaw Ghetto.

Methods

Database This study is a qualitative review of existing and publicly available oral histories from holocaust survivors. The USC Shoah Foundation's Visual History Archive (VHA) is an open, digital database compiling the consentually-provided testimonies of genocide survivors.[11] Founded by Steven Spielberg in 1994 as the Survivors of the Shoah Visual History Foundation, this database started with the goal of collecting the stories of 50,000 genocide survivors and witnesses.[11] The project's stated goal is to "[develop] empathy, understanding and respect through testimony."[12] Today, the VHA preserves more than 55,000 oral histories, which are primarily used for education and research.[11]

To obtain the oral histories that are featured in the VHA, the USC Shoah Foundation recruited international genocide survivors with diverse backgrounds.[13] Initially, interviewers met with survivors to facilitate the completion of a Pre-Interview Questionnaire and to answer questions about the process of providing testimony.[13] The Pre-Interview Questionnaire was intended to reveal the context of each oral history, and it allowed the foundation to gather detailed biographical information as well as information about wartime and post-war experiences.[13] On the day of the interview, the interviewer and videographer arrived at the interview location in advance to set up and speak with survivors.[13] Interviews were primarily

conducted in survivors' homes.[13] During the interview, interviewers divided questions into three sections: early life, genocide/conflict experiences, and post-genocide life.[13] Survivors were encouraged to speak freely about their experiences with limited interruption and prompts from the interviewer.[13] All testimonies were provided voluntarily.[13] The oral histories in the VHA vary in length, but on average, they are two hours long.[11]

After an oral history is uploaded to the VHA, researchers go through them and apply index terms that mark the content contained within each one minute segment.[14] Index terms are tags that USC Shoah Foundation researchers apply within segments of individual oral histories, allowing database users to quickly locate segments that cover topics of interest.[14] As of March 2023, the VHA contained 66,237 index terms.[14]

Ethics Approval The transcripts of oral histories used in this study derive from an archive collected as part of another, ongoing project and is therefore considered a "secondary dataset" for this research. The transcripts used in this study were obtained in such a way that they do not retain identifying information. Participant information is retained by the VHA, however, the researchers on this study do not, and will not, have the ability to re-identify the data. Under the regulatory framework governing human subjects research, this study does not require IRB review and approval.

Setting, Sampling, and Data Collection Oral histories were sampled from the VHA based on participant characteristics.[11] Transcriptions were copied and checked for adherence to audio recordings by the researcher before they were used in analysis. Incidental references to any potentially identifying information (e.g., names and addresses) were manually removed from oral history transcripts by the researcher.

To meet the inclusion criteria for this study, participants had to be Holocaust survivors who were at least 18 years old at the time that their oral histories were collected, and who completed their interviews in English. Participants must have lived in the Warsaw Ghetto in Warsaw, Poland during World War II. Participants meeting these initial criteria were then put through a process of exclusion based on the content of their testimonies. The researcher used index terms to identify eligible participants with testimonies that include descriptions of health care and public health in the Warsaw Ghetto. From the remaining participants, a group of 22 oral histories were selected for inclusion in the study. Inclusion eligibility is detailed in Figure 1.

After oral histories were identified, the researcher used index terms to isolate segments for use in this research. For this project, testimony excerpts were deemed relevant if they contained any of the following index terms: “ghetto medical care,” “ghetto injuries,” “ghetto injuries,” “ghetto quarantines,” or “ghetto diseases.” When necessary for context or continuity, segments of testimony that did not contain these index terms were included in the analysis. These four index terms were selected based on their high likelihood of linking to segments discussing specific instances of health care provision and their exclusive application to oral history segments focused on care provision within the ghetto setting. One potentially relevant term (“ghetto abortions”) was excluded due to a lack of geographically-appropriate testimonies. The indexing process used by the researcher to obtain the sample is outlined in Figure 2.

The researcher completed extensive reading in order to historically ground the statements made within oral histories with the aim of reducing the odds of contemporary misinterpretation. Primary sources, including images, film, documents, and diaries from the Warsaw Ghetto; historical books; and previous academic research were used to contextualize the information within the selected oral histories and to inform the coding process. Contextualization is vital to

digital Holocaust research because digital formats are thought to influence viewer perceptions of firsthand materials, and because of the subjective nature of primary resources.[15-16]

Methodological Approach All transcripts were coded within NVivo version 20.7.0.1533.[17] The researcher completed inductive, reflexive thematic analysis in accordance with the six-step process popularized by Braun and Clarke.[18] Prior to developing a codebook, the researcher read each transcript a minimum of two times, but often four times.[18] Once sufficiently familiar with the selected oral histories, the researcher initiated the iterative coding process, inductively coding the transcripts, reviewing initial coding, adjusting the codebook, and then correcting the data coding multiple times to ensure best fit.[18] After coding was complete, the researcher grouped codes into themes, which were also subjected to iterative review.[18] The final codes and themes were outlined within a comprehensive codebook, which provided a framework for answering the research question. Following thematic analysis, the researcher engaged in basic textual analysis using Voyant, a web-based analysis tool that is frequently used in humanities research and that offers an added opportunity for analysis through the distance reading of transcripts and resulting topic pattern recognition.[19-20]

Thematic analysis of this variety has been increasingly used in oral history analysis with insightful results.[21-24] This methodology is preferable to other common methodologies such as historiography or case study because the goal of this project is to assess the health of a well-defined community.[21,25] Working with a limited number of case studies would not have allowed sufficiently holistic analysis, and attempting to work from contemporary interviews or focus groups would not have been feasible because a significant amount of time that has passed since the Warsaw Ghetto existed, and many of those who had experiences with health services in the Warsaw Ghetto are either of an advanced age or are deceased.[21,25-26] Working with

quantitative methodologies would not have permitted adequate insights into human perceptions and is better reserved for researchers seeking to look objectively at rates of typhus infection, starvation, and the other health issues that were common among ghetto residents.

Oral histories pair well with community analysis of this variety, as they are often collected with the intent to clarify the experiences of a population.[21,25] Oral histories allow individual experiences to be interpreted in the context of social phenomena, which fits with the aims of this project.[25] Furthermore, oral history analysis permits access to the subjective experiences of a population that would otherwise be inaccessible.[24]

Within the field of public health, this is a novel study. There are an assortment of books and papers that serve as chronicles of medical care within specific ghettos. While some of these quote oral histories, the researcher did not encounter any that were primarily reliant on the analysis of oral histories. Primarily, work in this realm has been constructed with the intent of publication in historical or anthropological journals rather than with the goal of advancing medicine or public health. Existing work on this subject is intended to establish a narrative rather than interrogate an experience. This work uniquely explores patient experiences with health and their impact on the Warsaw Ghetto.

Rigor In order to maintain rigor, the researcher maintained an audit trail to track the coding and analysis process as well as her thought process and personal stances on topics. The researcher also exchanged ideas about the project with Brown University faculty advisors, including public health researchers with expertise in medical humanities and interdisciplinary digital humanities researchers, peers studying human rights issues in public health, and individuals without personal or academic involvement in this project. This effectively maintained the rigor of the study.

Results

Participants Excerpts from 22 oral histories were included in this analysis. Five participants identified as male and 17 participants identified as female. Participants' birth years ranged from 1912 to 1936, making them anywhere from 4 to 28 at the time of the Warsaw Ghetto's creation. All 22 participants were born in modern-day Poland, although four participants were born prior to Polish independence from the Russian Empire and are thus designated as Russian-born. Only four participants were born outside of Warsaw, Poland. 21 different interviewers conducted English language interviews between 1994 and 1998 in the participants' countries of residence, which included the United States, Canada, Australia, the United Kingdom, and South Africa. Expanded information regarding the sample is contained in Table 1.

The participants that were selected have diverse backgrounds and discuss a variety of unique medical experiences that took place in the Warsaw Ghetto during World War II. By identifying common themes among these medical experiences and analyzing the lived experiences of these participants, we can begin to understand the way that Warsaw Ghetto residents understood and utilized medical care within the ghetto.

Theme I: Participants reported witnessing and undergoing a wide range of medical experiences while residing in the Warsaw Ghetto.

The oral histories revealed that ghetto residents underwent a wide range of medical experiences while residing in the Warsaw Ghetto. Eighteen participants explicitly detailed the medical emergencies that they experienced in the ghetto. Of this group, seven participants reported being unable to obtain desired medications or other medical care. Participant 10 summarized the challenges with accessing care, stating, "All the doctors were gone. There were no medicine. It was such a bitter situation."[27] Participant 19 suggested that access was limited

because “all of those things which belong to the community were usually unbelievably crowded, and… there was hardly any money or equipment to keep you going.”[28] Participant 5 pointed out another layer of difficulty stemming from how “most of the medications were confiscated by the Germans.”[29]

Four participants underwent surgeries while living in the Warsaw Ghetto. 2 participants reported undergoing a fasciotomy (gangrene treatment) and a tonsillectomy without anesthesia. Participant 10 described her fasciotomy in great detail, stating:

> ...my foot was full of gangrene- swollen here, such a- um- and that was- a doctor. My mom said, “Where can I find a doctor?” She ran out and found some doctor. But the doctor did not have any instruments. Said, “how can I do that?” He came home and he- he came with my mom. And, “how can I help you?” So Mom said, “you can take a knife.” So- took a knife and opened it. *(Pauses. Shudders.)*. Ah, I remember the scene. Two men had to hold me. My mom called in two neighbors. Because there was no- no- any- any- narcotic, nothing. So. *(Pauses).* That was one thing that I remember.[27]

Two other participants were able to receive anesthesia for an appendectomy and a knee surgery. Participant 12, who underwent an appendectomy, explained “...single handedly, without any- any help- no nurses, nobody- [the doctor] got there and he- he administered the anesthesia, local anesthesia. And he administered- and he did the operation.”[30]

Eleven participants reported witnessing or experiencing disease. All 11 of these participants reported having family members and/or friends who became infected with typhus while living in the ghetto. Participant 11 shared, “My father also became ill. He had typhus, because he- he used to bring in people from outside to study, to learn the Torah. And we were very grateful for the doctor that helped us. And he recovered, even after a very serious bladder

complication."[31] Four participants reported becoming infected with typhus themselves. Participant 4 shared, "I was terrible, terrible sick. I remember, when I went to bed was winter. I remember that I-- I was dying. How do I remember? I remember I was unconscious."[27] One participant reported a family member developing a noncommunicable disease (bone cancer).

Eight participants experienced or bore witness to starvation. Participant 14 described the effects of mass starvation, sharing "I remember walking in the street and seeing people who were swollen with hunger, lying dead."[33] Participant 9 described the meals consumed in the household, stating "...my poor stepmother, she- horse meat, sometimes she cooked, rotten vegetables, or good veg- one soup a day. That was all we could have. And the soup was watery. And the bread was hardly any substantial bread. We really starved."[34] Participant 11 shared how the situation became so dire that children were used to smuggle food into the ghetto.[31] "Unfortunately, some of them were caught and they were shot," Participant 11 stated.[31] "You could see their little bodies hanging on the wall or lying in a pool of blood."[31]

One participant described witnessing executions because of poor health. Participant 2 shared:

> My mother was casualty of the selection… in the beginning, every few weeks, people were taken from the block of the houses, congregated on the streets, and standing in big-- in tight group… So these people who would march in front of [German judges], and some were directed to the right, which meant that-- you know, judging from the people, they were young and strong-looking, healthy-looking. And older people, or sickly-looking, or children, were sent to the left. We didn't know at first what that meant. But we knew that probably being with young and strong…[35]

Only three participants expressed that they perceived their physical health as generally good while living in the ghetto. In contrast to many of the other participants' experiences, Participant 17 reported, "…I'm just telling you that to show you that my life- whereas it wasn't, of course, as good as it had been before, I don't remember being hungry. And I remember studying and still living a life of, more or less a young- a young person, a- a young teenager."[36]

Participants reported receiving care from both trained and untrained care providers while residing in the ghetto. Ten participants discussed receiving care from trained medical professionals. Most commonly, care was provided during home visits (n=7). Participant 8 expressed the process of at-home care, sharing, "there was one doctor, a Jewish doctor, who went from one apartment, from one- one house to the other house."[37] Participant 13 described just how far at-home care could go, stating:

> If you had anything else, like I was very sick at the time and had- had to have an operation, and they were going to do it in- in our flat on the dining room table because I couldn't go to the hospital. Except that it- I- I managed to- to- to get well without it. But that was the idea, that I had to have the operation on the dining room table.[38]

Two participants reported sneaking out of the ghetto to receive medical care at Jewish hospitals in other areas. Participant 5 used a rickshaw to sneak through the ghetto gate, adding "...on the Christian side... we took off the armbands, went… to this train station, and went to Siedlce, and came there the same day… I was brought to the hospital. The next day, operated."[29] Participant 7's aunt was treated for bone cancer in "...a private clinic in the ghetto."[39] Participant 12's father's connections with the Polish police enabled her to seek care at a non-Jewish hospital.[30] Participant 12 described being snuck out of the ghetto "...in a wagon which was used to taking corpses to the cemetery."[30] There, she was operated on and left "to recover in a closet."[30] She

acknowledges the uniqueness of her situation, adding "You couldn't afford the luxury of being sick. And my case of that operation was very unusual, and very fortuitous."[30]

Four participants discussed care provided by untrained providers. Participant 15 described caring for strangers, saying, "[officials] would give you this much money when you come for the night and watch [the sick]. I couldn't do anything for them."[40] All three of the other participants who discussed care provided by untrained providers discussed healthy family members caring for other family members who were infected with typhus. When Participant 9's father became infected with typhus, "the other people [in the home], had also to move out, so it was only I with my father."[34] Similarly, Participant 4 was tasked with caring for her father alone.[32]

Four participants mentioned that they were aware of care options in the ghetto but that they never utilized those options. Three of these participants point out that there was one hospital in the ghetto but that it was too overcrowded to warrant use. Participant 13 attributed the overcrowding to the typhus epidemic, stating, "the Jewish hospital couldn't even afford to take any other cases but typhus cases in- into the hospital."[38] Participant 19 did not discuss crowd size, but shared, "...there were doctors, yes, but as to the conditions in the hospitals in ghetto, I really don't know because I haven't ever been in."[28]

In discussing care, one participant also shared that they were affiliated with someone who was involved in manufacturing typhus vaccines. Participant 7's cousin "was a biochemist. She graduated before the war in Montpellier University, in France. She was working… on research for the vaccine against typhoid."[39]

Participants reported infectious disease preventative measures as being enforced by different groups with varying degrees of authority. Three participants reported preventative

measures being enforced by family members. Participants 2 and 19 reported preventative measures being enforced by their mothers.[28,35] Alternatively, Participant 14 reported, "...my sister used to go hold me by my collar. I mean I- it's just- and make me walk so that I don't touch anybody."[33] Two participants reported preventative measures being enforced by ghetto groups or organizations. Participant 13 stated, "the youth committee was trying to help," and Participant 19 pointed at the Judenrate and "some kind of health service."[28,38] Two participants reported preventative measures being enforced by authorities. Participant 22 described quarantine monitoring, stating "policemen or somebody was standing there not allowing the tenants to leave the building- only on special permission."[41] Participant 9 shared, "...the authorities said that those who have typhoid, only one person can look after the ill patient."[34]

Eight participants reported witnessing burials following deaths from illness. Five participants reported witnessing traditional burials. Participant 2 shared, "We had the burial, so at least [father] was buried like a-- like a human being."[35] Participant 16 perceived traditional burial as "civil disobedience," explaining, "we deprived the Germans, the Nazis, of taking pictures. And we deprived the living Jews of a horrible vision. And also, we saved the dignity of the dead. And the main thing, we succeeded in defeating, in a way, the Nazis, not to have them make pictures."[42] Five participants discussed witnessing non-traditional burials. All five of these participants referred to viewing the corpses abandoned in the street rather than buried or treated according to religious tradition. Participant 16 shared, "It was horrible to get out in the morning and just sit and look at all those corpses sometime covered with a newspaper. And then, later on, the Germans were coming… and took photos. Then- the Jews are laying in the street like rat, like dead rats."[42]

Theme II: Participants engaged in health behaviors based on their exposure to health information and rumors while residing in the Warsaw Ghetto.

Participants engaged in health behaviors based on their exposure to public health information and medical rumors while residing in the Warsaw Ghetto. Two participants specifically discussed avoiding medical care because of health-related rumors. Participant 5 perceived that seeking care would lead to infection.[29] He expressed, "There was a hospital by the name of Czyste… I was afraid if I go there for help that I would get a infectious disease, which would be worse. And so, I lie in bed."[29] Participant 4 understood that seeking help would lead to death.[32] She shared, "if [parents] would call the doctor, they would have to notify the Germans about it. And they would have taken me to the hospital. And whoever went to the hospital never came out alive."[32]

Fourteen participants discussed implementing preventative measures based on grassroots health information in order to reduce the spread of infectious diseases in the Warsaw Ghetto. Six participants discussed quarantining in order to prevent typhus infection. Participant 3 described how "...when there was a case of typhoid, the whole apartment building was blocked off and disinfected and people quarantined."[43] Four participants received immunizations or witnessed others receiving immunizations in order to prevent typhus infection. Participant 19 expressed "we probably were able still to get some serum and so on."[28]

Three participants explained how they avoided physical contact with people or objects in order to prevent typhus infection. Participant 14 relayed how "it was obsessive with- you shouldn't touch anybody, because if you got a flea or whatever on your clothing, it could kill- you could be bitten- by somebody who was infected and you could get- and you die. A lot of people die."[33]

Two participants reported cleaning in order to prevent the spread of diseases. Participant 9 described "[having] to boil all the clothes and sweating" in order to kill lice and prevent typhus.[34] Two participants reported checking for lice prior to entering buildings in order to prevent the spread of typhus. Participant 18 described how "People had lice on them, on their clothing. To come into the house, you had to be absolutely certain, you know, that you got rid of the lice before you entered the house."[44]

Theme III: Participants expressed diverse interpretations of the health care they experienced while residing in the Warsaw Ghetto.

While residing in the Warsaw Ghetto, residents developed diverse perceptions of the health care they received. Participants perceived the ghetto's typhus epidemic both negatively and positively. Six participants perceived typhus negatively, as a disease of poverty, a political tool, and/or generally dangerous. Four participants commented on the danger of the epidemic, with Participant 12 noting that the danger came from not "[having] the wherewithal to deal with an epidemic."[30] Participant 19 explained how typhus was leveraged as a political tool, stating:

> …the Germans, when they started the ghetto, they- the official reasoning for that, what they said, was that the Jews were the carriers of typhoid, and the Jews were unhygienic. They were dirty. They were- they were danger to the rest of the population. And one had to isolate them, and in this way, one would be able to isolate the danger of epidemics.[28]

Two participants viewed typhus as a disease of poverty. Participant 11 shared how "most of the people who were homeless were carriers of lice," and Participant 18 explained that "the poor… were wiped out with the typhus."[31,44]

Four participants perceived typhus positively, as either a comparatively easier way to die or as having a degree of utility. Participants 9 and 20 both relayed how they wished that their

parents would die from typhus, with Participant 9 lamenting, "I actually wish that [father] should die" and Participant 20 sharing "I often thought it would have been better if my mother would have died of typhus. At least she would have died in her own bed, in the apartment, surrounded by family, not in some gas chambers."[34,45] Participants 1 and 16 both shared examples of ghetto residents finding personal utility in the typhus pandemic.[42,46] Participant 1 described using typhus as a cover to prevent ghetto guards from opening a casket that was being used to smuggle someone out of the ghetto, sharing:

> They wanted to open the casket. And [wife] had an idea and told the… buggy man that she died from typhoid fever. And those beasts, they were very brave, with woman and armless people, you know, and so on. But they were scared of-- to death of contagious diseases. So he moved away from it.[46]

Alternatively, Participant 16 described how ghetto residents would avoid reporting deaths in order to help themselves, stating "When [people] died at home, families were putting them out naked outside in order to not report the death, so they could have their rations card. They used the rations card. Not report them… also… saved the building for a quarantine."[42]

Three participants discussed the treatments that they perceived as useful in treating typhus. Participant 9 recommended cleaning clothes as a treatment for typhus, sharing "I saved [father] because I cleaned the clothes."[34] Participant 9 also perceived fasting as a treatment for typhus, explaining "In typhoid, if you don't eat, then you survive."[34] Participants 4 and 11 both recalled turning to prayer in order to treat typhus.[31-32] Both perceived prayer as saving their lives, with Participant 4 describing how she bargained with God: "I never prayed so hard in my life as I did in that moment. I said, God, I'm so young. Let me live a little longer."[32] Participant 11 shared, "My mother was praying, in- into this big wardrobe… where all the holy books were, to-

to save a- a child- the youngest child. And I survived. I recovered. And I'm sitting, telling you the story of it now."[31]

When discussing the causes of the typhus epidemic, 11 participants perceived the disease as stemming from conditions in the ghetto. Six participants traced typhus to sanitary conditions in the ghetto. Participant 12 expressed, "The sanitation was very poor. And because sanitation was very poor, there was an epidemic of typhus, or typhoid."[30] Participant 3 relayed, "A cake of soap was equivalent to, to a cake of gold."[43] Six participants suggested that typhus was linked to malnutrition. Participant 11 summarized this link, stating "There was malnutrition, starvation, epidemics, and disease."[31] Five participants associated typhus with overcrowding in the ghetto. Participant 13 expressed, "The typhus was reigning in the ghetto. It was so full, the ghetto was so crowded that you couldn't help it."[38] Two participants perceived the spread of typhus as being connected to cold exposure. Participant 20 perceived the epidemic as being fueled by what was "...a very, very cold winter. I think one of the coldest."[45]

Three participants shared their perceptions of the typhus vaccines that were available while they lived in the Warsaw Ghetto. All three participants perceived the vaccine as rare. "It was very rare. It was hard to get," Participant 17 stated plainly.[36] Two participants viewed the vaccine as expensive, with Participant 17 pointing out that "probably one of those shots cost several hundred dollars, because this was one of the big causes of death in the ghetto" and Participant 19 pointing out that "whoever managed to have the money together, then they would- they would get immunized."[28,36] Participant 19 also relayed that the typhus vaccine was not administered to children due to safety concerns, stating, "I think my parents were immunized, but I think I was not immunized. I think the serum was not considered safe for children."[28] One participant did not believe that the vaccine was particularly effective because it was not

administered in full doses. Participant 15, who split a vaccine with another individual, shared "...I don't believe it helped me not to become afflicted. I think God helped me, because that was a tiny amount, wouldn't do much. But we shared."[40]

Two participants shared ways that they perceived their current behavior as being impacted by their health experiences in the ghetto. Participant 1 stated that, at the time of their interview, their pain tolerance was unusually high because of their experiences in the ghetto.[46] He attributed this to receiving a tonsillectomy without anesthesia in the ghetto.[46] Participant 1 stated, "...you can cut my hand… and I will not blink an eye. I can take pain. And those pains, I really did, was terrible, when [the doctor] was cutting."[46] Participant 8 described having nightmares because of her health experiences in the ghetto, explaining, "I have always these pictures and these nightmares about- about it- especially the children that I couldn't- I couldn't look at that."[37]

Text Analysis

Text analysis in Voyant revealed the mechanics of how participants discuss health care in the Warsaw Ghetto by quantifying the language used to discuss health care perceptions.[19] This method of analysis is used in digital humanities to assess the commonalities and trends within groups of texts.[47] It has been used for purposes ranging from understanding 18th century historical documents, to enhancing terrorist group investigations, to extracting patient data from medical records.[47-49] To complete this secondary analysis, the researcher cleaned a copy of each oral history transcript so that it contained only language that originated with participants. Cleaned transcripts were uploaded into the free, web-based tool Voyant, which then generated a series of statistics and visualizations revealing the linguistic breakdown of the transcripts.[19]

Subtracting a series of stop words, the top ten most-occuring words in the transcripts are "know" (n=86), "people" (n=73), "ghetto" (n=68), "remember" (n=43), "typhoid" (n=40), "typhus" (n=37), "mother" (n=33), "father' (n=30), "said" (n=29), and "doctor" (n=28). The high repetition of these words implies greater perceived importance in discussions within the context of the oral histories. It can be understood that "know," "remember," and "said" are the top qualifiers for contemporary communication regarding past health care; "people" (as a community), "ghetto" (as a community), "typhoid," and "typhus" are perceived as the most important topics of conversation; and "mother," "father," and "doctor" are perceived as the key actors in health care provision across the selected oral history segments. The Collocates Graphs in Figure 3 showcase keywords (in blue) and the terms that frequently appear in close proximity to them (the collocates; in orange) within the oral histories. The term "people" frequently appears near "ghetto," "young," "lot," "know," and "dying." The term "know" frequently appears near "later," "lot," and "people." The term "ghetto" frequently appears near "hospital," "typhus," "time," "life," and "people." The collocates demonstrate a relationship between these topics, showcasing the common language within the oral histories that were analyzed and offering a unique opportunity to visualize the contents of the transcripts. These findings highlight the importance of parental figures and doctors in health care conversations, and highlight the way that typhus dominated discussions of health within the Warsaw Ghetto.

Discussion

Through thematic analysis of selected segments of oral histories, the researcher identified some of the ways that former residents of the Warsaw Ghetto understood and interpreted their health experiences while residing in the ghetto. This provides unique insight into the lived

experiences of individuals seeking health care in the Warsaw Ghetto. The themes identified highlight participants' experiences, perceptions, and behaviors; demonstrating how participants interpreted and utilized health information and resources circumstantially, and clarifying the facets of ghetto life that they perceive as impacting their health.

In Theme I, participants highlighted the specific health experiences that they underwent while residing in the Warsaw Ghetto. The high degree of variability between experiences points to the dismal conditions within the ghetto. Had this community been endowed with resources, it likely would not have experienced health concerns at its rate and range. The experiences described also emphasize the lack of structure in health care provision and the resulting grassroots nature of care received.

In Theme II, participants expressed the factors that affected their engagement with health care. The findings suggest that participants were swayed by health rumors, opting to avoid health care when rumors suggest risk of harm, and that participants were likely to engage in preventative measures that they discovered through friends and family rather than through formalized health care systems. Participants placed a high degree of trust in grassroots information exchange.

In Theme III, participants shared their perceptions of different health challenges faced within the ghetto. Because of a lack of resources, participants depended on nontraditional treatment forms such as cleaning, fasting, and prayer, rather than resting and seeking the medical treatments that they would have had access to prior to World War II. It is implied that participants would have sought immunization against illnesses such as typhus had immunizations been more accessible. Participants were conscious of the factors that impacted poor health

outcomes within the ghetto and indicated a belief that community health outcomes could have been improved if ghetto residents had been provided with better resources.

This study finds that health care was provided in the Warsaw Ghetto in the absence of formal health service structures and within the confines of severe resource scarcity. Despite the perceived absence of formal health institutions, the 22 participants in this study engaged in behaviors to keep themselves as healthy as possible. Participants demonstrated that they will interpret medical information independently in the absence of unified health systems. All of this suggests that, even when resources are scarce and health services are not accessible, individuals will continue to behave in ways that they believe will protect them, relying on grassroots and informal medical information in the absence of structure. Non-traditional care options are preferable to no care options.

Furthermore, the findings of this study corroborate the theory of medical treatment as a form of resistance against authorities that has been proposed by other researchers. Because resource deprivation was intended to accelerate genocide, engaging in health-promoting behaviors can be viewed as a form of medical resistance.[1] By attempting to forge their own paths to health, the participants in this study were actively engaging in rebellion against the authorities that wanted to see them eliminated. Genocide did not negate community resilience.

This work has implications for contemporary research regarding vulnerable populations. Researchers considering the ways that individuals in low-resource, highly-stigmatized communities interpret and utilize health care should inquire about systems of grassroots medical care and the implications of word-of-mouth health information sharing, as vulnerable populations may be more likely to engage in health care outside of care systems and utilize available, but not always reliable, information to make health care decisions. This project

suggests that some of the biggest challenges to vulnerable populations' abilities to utilize care might include health communication, pain management, medical training, care taking, and resource availability. In designing future qualitative studies with vulnerable populations, these topics should be considered in interview questions.

Understanding how individuals independently treat their health concerns in communities resembling the Warsaw Ghetto can provide insights for interventions, even under differing circumstances. Future research should consider how we can help those who need help but will not or cannot come forward to receive services, and how we can provide emergency medical training so that a lack of health infrastructure does not inhibit safe, effective, and necessary medical care.

This work has broader implications for how public health researchers can utilize oral history data and other forms of testimony to inform public health practice. It is important that researchers collect oral histories from populations affected by health emergencies so that their experiences may be preserved in their own words rather than in the subjective words of researchers so that analysis can dig into the reality of communities' experiences. Public health interventions that do not appropriately consider the true experiences of populations are at risk of doing more harm than good. Additionally, this work emphasizes the potential for collaboration between public health and other disciplines, including digital humanities, the tools of which can be used to expand public health analysis and data visualization in new and interesting ways. Finally, preserving oral histories for secondary qualitative analysis in the future means that they can be used to answer new research questions or assessed with new technologies in the future.[50]

Limitations This work intends to push the boundaries of methodological approaches and crosses disciplines, and therefore, the research team made decisions and trade-offs as part of the

exploratory work. There are a handful of significant limitations to this research that are worth acknowledging. Methodologically, this research would have benefited from coding confirmation by a team of qualitative researchers. This action was not within the scope of this project.

Lack of control over the conceptualization of the interview process for the oral histories creates difficulty in overcoming gaps and bias in the data.[50] The researcher believes that this project would have had additional value and clarity if the researcher had been able to write her own follow up questions for participants. Follow up was not possible given the historical nature of the data.

The age of the data relative to the age of the Warsaw Ghetto creates high potential for recall bias. Participants' oral histories were collected 50 years after their residence in the ghetto, so it is possible that their accuracy and level of detail in relaying their experiences has been affected. The researcher believes that there is a potential benefit to this, as the oral histories tend to focus on facts rather than emotions, and that the oral histories are truly representative of the most significant issues in the ghetto, according to the memories of survivors.

Finally, this study raises ethical questions of the use of oral histories as a dataset. Oral histories cannot be used without addressing questions of fidelity in interpretation.[24] While oral histories are a useful way to access populations that are hard to reach, subjective qualitative analysis removes some of the humanity from the content of the oral histories, reducing individuals to data points.[24] Furthermore, most widely used publicly accessible public health datasets are collected and used in fidelity with the terms of the informed consent, or collected without an informed consent but de-identified. Oral histories typically abide by ethical principles established by the Oral History Association (OHA) to ensure that the data is collected and used appropriately.[51] The use of the oral histories for the purpose of public health data will require

more careful examination, consideration and synthesis of existing ethical paradigms for public health data and oral history. Common to other historical studies, there is no clear path to obtaining informed participant consent. The data is public, so it is up to researchers to assess and ensure ethical use of the oral histories. Deidentified data helps mitigate, but does not negate, this concern.

Figure 1: Inclusion Eligibility

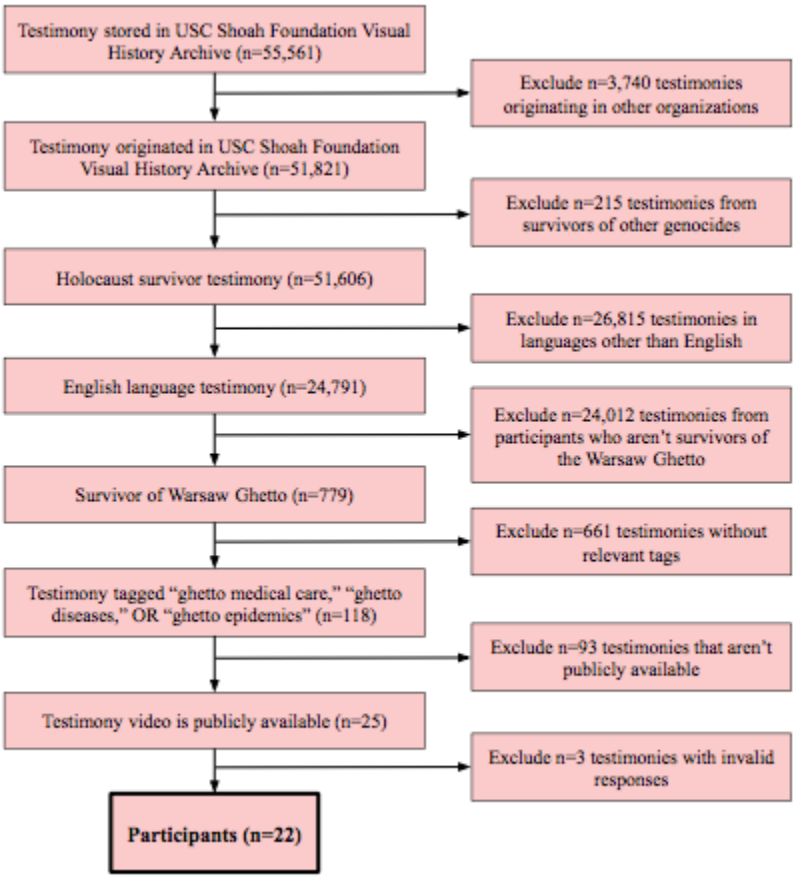

Figure 2: Filters and Index Terms Used to Search for Oral Histories

I. Researcher's Application of Initial Filters

A. Set Organization = "USC Shoah Foundation"
B. Set Event = "Holocaust"
C. Set Language = "English"
D. Set Experience = "Jewish Survivor"

II. Researcher's Application of Testimony Filters

A. Select "Video Available"
B. Select "Subtitles Available"

III. Researcher's Selection of Index Terms for "Subject"*

A. Select "Health"
    1. Select "Physical Health"
        a) Select "Medical Care"
            (1) Select "Ghetto Medical Care"
        b) Select "Injuries"
            (1) Select "Ghetto Injuries"
        c) Select "Hospitals"
            (1) Select "Ghetto Hospitals"
        d) Select "Diseases"
            (1) Select "Ghetto Diseases"
        e) Select "Quarantine"
            (1) Select "Ghetto Quarantines"

IV. Researcher's Selection of Index Terms for "Place"

A. Select "Europe"
    1. Select "Poland"
        a) Select "Warsaw (Poland: Voivodeship)"
            (1) Select "Warsaw (Warsaw, Poland)"
                (a) Select "Warsaw (Warsaw, Poland: Ghetto)"

*The researcher notes that the index terms "ghetto malnutrition," "ghetto infestations," and "ghetto sanitary conditions" were omitted from inclusion but should be included in future studies setting out to assess the mechanisms of disease spread in ghettos.

Figure 3: Collocates Graphs, Generated by Voyant

Table 1: Overview of Participants Included in Study

Participant	Sex	Birth Year	Birth Location	Approximate Age At Creation of Warsaw Ghetto (1940)	Interview Year	Interview Location
Participant 1	Male	1914	Warsaw, Poland (historical - Russian Empire)	26	1995	Chicago, Illinois, USA
Participant 2	Female	1920	Warsaw, Poland	20	1994	Los Angeles, California, USA
Participant 3	Female	1928	Warsaw, Poland	12	1996	Nepean, Ontario, Canada
Participant 4	Female	1925	Warsaw, Poland	15	1995	Stokie, Illinois, USA
Participant 5	Male	1920	Warsaw, Poland	20	1997	Montréal, Quebec, Canada
Participant 6	Female	1926	Warsaw, Poland	14	1996	Melbourne, Victoria, Australia
Participant 7	Female	1920	Warsaw, Poland	20	1998	Cambridge, England, United Kingdom
Participant 8	Female	1921	Warsaw, Poland	19	1997	Brooklyn, New York, USA
Participant 9	Female	1920	Warsaw, Poland	20	1997	London, England, United Kingdom
Participant 10	Female	1913	Warsaw, Poland (historical - Russian Empire)	27	1998	Santa Monica, California, USA
Participant 11	Female	1921	Warsaw, Poland	19	1996	Sea Point, Western Cape, South Africa
Participant 12	Female	1922	Radomsko, Poland	18	1996	Sarasota, Florida, USA
Participant 13	Female	1919	Lublin, Poland	21	1995	Sydney, New South Wales, Australia
Participant 14	Female	1936	Warsaw, Poland	4	1998	East Hampton, New York, USA
Participant 15	Female	1912	Łuck, Poland (historical - Russian Empire)	28	1996	Hollywood, California, USA
Participant 16	Male	1915	Warsaw, Poland (historical - Russian Empire)	25	1996	New York, New York, USA

Participant 17	Female	1927	Warsaw, Poland	13	1996	West Orange, New Jersey, USA
Participant 18	Female	1923	Łódź, Poland	17	1996	Sydney, New South Wales, Australia
Participant 19	Male	1933	Warsaw, Poland	7	1997	London, England, United Kingdom
Participant 20	Female	1926	Warsaw, Poland	14	1995	Forest Hills, New York, USA
Participant 21	Male	1926	Warsaw, Poland	14	1995	Studio City, California, USA
Participant 22	Female	1930	Warsaw, Poland	10	1995	Toronto, Ontario, Canada

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