Obstetrics and Gynecology in Third Reich concentration camps: a never-ending nightmare

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ABSTRACT

Unprecedented and horrible crimes against humanity were committed during World War II. The Nazi doctrine of ethnic hygiene was based on "social Darwinism" and, consequently mass murder programs began as ethnicity became a metaphor of disease. Nazism implemented the connection between anti-Semitism, racism, and sexism. Doctors allied with the regime, according to the paradigm of preservation of the racial purity, used abortions as a part of the desideratum of the state in a genocidal program. In the gynecological arena, the medical experiments that were carried out fall into two basic categories: those sponsored by the regime for specific ideological or military reasons and those that reflected the presumed scientific interest of a particular doctor. Herein in this review, we have revisited the medical data and bioethical aspects of this historical period.

KEYWORDS

Holocaust, Third Reich, obstetrics & gynecology, healthcare professionals, war crimes.

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Introduction

Terrible crimes against humanity were committed during World War II. The murder of more than 1.5 million children was justified by the Nazis, to prevent *"(...) the avengers, in the form of children, grow up and confront our children and grandchildren (...)"*. The extermination was carried out with a policy of abortions and infanticide immediately after the birth. Nazism implemented the connection between antisemitism, racism, and sexism. Women who were biologically capable of having children were allocated as members of a racially selected superior or inferior group. Just as the Nazis tried to persuade German women that no duty was more important than having children to the Third Reich, they also in turn insisted that Jewish motherhood, considered to be an "inferior population", must be eradicated forever. Nazi sexism was irrevocably intertwined with racism, and all women were subjected to a double policy: that of support or that of extermination.

In the gynecological arena, most of the medical studies that were carried out were classified into two basic categories: those sponsored by the regime for specific ideological or military reasons and those reflecting the supposed scientific interest of a particular doctor. This historical review analyzes how doctors, either as free professionals or as prisoners in concentration and extermination camps, interacted with the Nazi regime and its racial policies.

Obstetrics

1. Eugenesia

Doctors, who were committed with the Nazism and its paradigms, performed abortions as a part of the genocidal program reflecting the state desire to preserve racial purity. Abortion was used as a weapon of mass destruction by doctors, who had supposedly been trained to heal, but, unquestionably, had to comply with the political program of the moment. On the other hand, a medical paradox also occurred herein: some Jewish doctors practiced abortions within their community with the intention of saving lives [1].

The Nazi doctrine of racial hygiene was based on social Darwinism. The Nazis stated that the fall of the nation was the consequence of a weakening of the genetic pool. Therefore, the policies regarding abortion and pregnancy were only one of the methods designed to ensure the annihilation of what the Nazis considered a "poorer genetic stock." This biomedical paradigm provided the theoretical basis that allowed doctors pass from the principle of non-maleficence to kill in the name of the state [2]. The mass murder programs began when official medicine stated that human life had a differential value and ethnicity became a simile of disease [3].

From the beginning, the Nazi politicians used medicine to promote "positive eugenics" and encouraging births among German women based on statements such as *"the nation's stock of ovaries is a national resource and the property of the German state."* [4]. Therefore, contrary to the abortion policy for Jewish women, the access to birth control for German women, in all its forms, was severely restricted and abortions were only allowed if the life of the German mother was in danger [5]. Accordingly, the German

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medical community in line with the Nazism encouraged German women to give birth to as many children as possible.

The Nazi plan targeted Jewish women and other people of "inferior descent" because Jews and other non-Arian people were those who could ultimately guarantee the continuity of a life considered "undeserving." The Nazis prohibited abortions among German women to preserve the "healthy" unborn German, but allowed, even encouraged, the destruction of the non-Germans and German women with congenital malformations or hereditarily diseases. Thus, in these cases, abortions were forced in the interests of the racial hygiene.

In 1933, with the approval of the Law for the Prevention of Hereditary Diseases, eugenic sterilization appeared on the scene and one year later a law allowing the abortion of "defective" pregnancies in the context of racial hygiene was approved [6]. Nazi leaders monitored medical marriage, sexuality, eugenic, and pregnancy counseling centers using their records to determine the necessity of sterilization of certain people. In this sense, the Nazis had established eugenic courts whose function was to decide who was suitable for reproduction. During the years preceding the outbreak of World War II, nearly 320,000 German people with "of no value lives" were sterilized under the terms of the sterilization law [7]. This sterilization program was the open door for the future mass murder.

The program of euthanasia in German hospitals called Action T4, was started as a precedent for the Holocaust, as it was the training for mass extermination. Even the first gas chambers were created and used in the basements of some psychiatric hospitals, camouflaged with words such as *"disinfection rooms"* [8]. The doctors responsible for the supervision of the *"euthanasia"* procedures in German hospitals were also responsible for formulating the criteria and implementing the early stages of the mass annihilation of Jewish people. As a paradigmatic example, Irmfried Eberl (1910-1948), Austrian psychiatrist and medical director of the euthanasia institutes in Brandenburg, was the first commander of the Treblinka death camp.

The German medical community adopted those racist and discriminatory theories and proceeded to carry out a program of sterilizations, abortions and murders, under the excuse that all these procedures were carried out under the current legislation, thereby avoiding ethical and medical dilemmas. Medical consent, as unnecessary, was not requested and the privacy of the medical-patient interaction was systematically breached. There was no critical (ethical or moral) debate regarding this issue.

2. Pregnancy, childbirth and abortion

The Nazi stand regarding pregnancy, childbirth and abortion was obviously subjugated to the "Final Solution" of the "Jewish problem", and once again the medical profession was inevitably involved in that operation. In the period between 1942 and 1943, the Nazis banned all births in the ghettos making abortion mandatory. The punishment for giving birth was the death of the whole family as well as the Jewish health care provider. In other words, abortions were used as a sword of the state, but the sword was placed in the hands of Jewish prisoner healthcare professionals. According to Jewish principles and the ethics of doctor's oath, abortion would be only acceptable if, by carrying the fetus to term or delivery, there was a direct threat to the life of the pregnant woman. Thus, Jewish doctors in the ghettos and camps faced personal and professional dilemmas when they needed to carry on with making medical decisions such as choosing between one aberrant action such as performing an abortion, or another one even worst such as allowing the death of the mother if the abortion was not performed. Both scenarios imposed by circumstances that were not of their choice [9].

The first postwar medical testimonies were given by doctors who had been present in the Auschwitz-Birkenau concentration camp. Key testimonials were those of Gisella Perl, Olga Lengyel, Lucie Aldsberger, and Miklos Nyiszly [10]. Neus Català (1915-2019), a Catalan nurse imprisoned at Revensbürk concentration camp, testified that pregnant women in the extermination camps had little or no hope of survival, and very few were saved. Newborns were automatically exterminated by drowning them in a bucket of water or throwing against a wall, thus, dislodging them. Women agonized in the poor hygienic conditions of childbirth or went insane overwhelmed by the impotence while witnessing such atrocities [11]. Similarly, Olga Lengyel (1908-2001) in her book "A Woman Survivor's True Story of Auschwitz", referred that Jewish pregnant women were a serious menace to the Nazis theories regarding race and ethnics as those women would be capable of bringing in new generations of Jewish people, and for that reason, once arrived to the extermination camps they were sent directly to be exterminated [12]. From this perspective, the only way the mother could escape the death sentence was by the concealment of the pregnancy followed by a secret abortion or suffocating the newborn [10].

Another shocking testimony of the horrors of the holocaust is described by Gisella Perl (1907-1988) in her book "I Was a Doctor at Auschwitz". Perl describes a day in 1944 when she was on an assignment near the crematorium, and discovered the horrendous farce made by the SS officers who turned to Jewish women and asked those who were pregnant to step forward, promising a double ration of bread and milk in a place reserved for future mothers… the crematorium. Gisella Perl said that the greatest crime that could be committed in Auschwitz was to be pregnant. Despite her professional and religious beliefs, she had to perform abortions in unsanitary conditions, without appropriate medical instruments or anesthesia. In the women's barracks at Auschwitz, Dr. Perl was faced with the dilemma of having to eliminate countless fetuses in the hope that the mothers would survive since if she hadn't, both mother and child would have been murdered [13]. According to the historian Bernard Braxton [14], Perl's description of the events at Auschwitz camp was virtually identical in every detail to the court testimony of Dr. Olga Sulima, an inmate physician at Auschwitz from the Soviet Union. Despite the controversy, Perl saved her life and possibly that of hundreds of Jewish women [15].

In contrast and accentuating the debate, the figure of Stanisława Leszczyńska (1896-1974), the so-called "The midwife of Auschwitz", who with her motto "No, not now not never", faced Joseph Mengele when the Nazi doctor ordered her to euthanize newborns. Time after, in a document entitled "Raport położnej z Oświęcimia" (The Report of a Midwife from Auschwitz), she related how she had put her life at risk to save neonates. In that manuscript she alludes to the meeting with Mengele. Of

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the approximate 3,000 deliveries she attended, more than 2,500 newborns were killed, a few hundred others with blue eyes were sent to orphanages to be indoctrinated and only thirty infants survived in the care of their mothers [16-18]. Reminiscences similar to the history of Stanisława Leszczyńska are presented in the book "Triumph of Hope" by Ruth Elias (1922-2008), where she gives her personal testimony of a woman who gave birth at Auschwitz. Mengele forced her to bandage her breasts and forbade her to feed her baby as part of one of his medical "experiments" aimed at testing how long a newborn could survive without food. Elias described how Joseph Mengele developed his own pregnancy diagnostic test in the Holocaust reality: he asked women if they were pregnant, and in case of doubt or suspicion that they were, he twisted their nipples to check if they were leaking milk [19].

This and the previously described conducts in the extermination camps caused an obstetric distress. Many of these women never recovered from the shock provoked by the death of their newborns. Lucie Adelsberger was a German Jewish doctor who was imprisoned during World War II in the concentration camps of Auschwitz and Ravensbrük, where she provided medical care to other prisoners; she states in her testimony that many women never forgave themselves and the Jewish doctors who ended the lives of their newborns. On the other hand, other survivors claimed that they owed their lives, and the lives of their later children, to those Jewish doctors. Jewish doctors confronted personal and professional ethical dilemmas that had to be resolved in the direst circumstances and, in the post-war years, they suffered traumas caused by those unbearable situations [20]. Some, such as Gisella Perl, subsequently attempted suicide, unable to bear the moral burden of the decisions they had made during those times of horror.

It is to note the very special example of the "Pregnancy Unit" (Schwanger Kommando) in the Kaufering sub-camp in Dachau. Seven starving women with growing abdomens made no secret of their secret. Surprisingly, they were not killed. Instead, they were housed in a barrack and fed by a Jewish Kapo in charge of the kitchen. The Kapo recruited a Jewish obstetrician Dr. Erno Vadasz, a prisoner in the men's camp, to attend the delivery of those babies. The heroism of the mothers was complemented by the heroism of the doctor who would be remembered by his words, *"Many Jewish children have been killed, these must survive"*. Under his assistance the last baby was born one day after the demolition of the crematorium, on April 29, 1945. The liberation US army found seven mothers in satisfactory conditions [15]. After liberation, Vadasz learned that his entire family had been murdered. Vadasz was never rewarded or recognized for the assistance given to the mothers and for helping them maintain the newborns alive. The anecdotal story, told by Geza Harsanyi, suggests that Vadasz had received false documents by Nazis to leave the camp, accompanied by a supervising nurse. Such a scenario could have been possible because Vadasz successfully treated commander's wife; but this has never been historically confirmed [15].

The remembrance of persecuted doctors is a particularly delicate chapter in the Jewish history. This topic has been brought up repeatedly in Israeli medical journals; the discovery of the historical records has confirmed that those doctors were often considered heroes and innovators, despite the injustice and persecution they suffered. Certainly, Vadasz and Perl were not the only Jewish doctors or gynecologists forced to work inside the concentration camps; the majority of medical professionals were murdered together with their patients, and their stories will never be known. Both Perl and Vadasz are the two faces of the coin: Perl took lives to save lives, and if she had been caught, she would have been sent to the crematoria or gas chamber. Vadasz, on the other hand, risked his own life, in terms of health, to help mothers give birth. Malnourished and ill, he delivered babies under difficult circumstances and even cared for mothers to regain health. Both doctors remained human in an inhuman world, and their commitment towards lives saving continued despite the loss of their own family members. Both doctors, in an opposite way, contributed to the birth of future generations.

Gynecology

One of the most humiliating situations for women was the exhaustive gynecological examination carried out in unsanitary conditions. Neus Català in her book "De la deportación y la resistencia. 50 testimonios de mujeres españolas" (Regarding deportation and resistance. The testimonies of 50 Spanish women) described this shameful situation: *"They shaved their hair; their names were taken away and they were given a number that they also had to call-out in German. A gynecological examination was then carried out with the inspection of all women with the same instruments"*. This section describes aspects related to female conditions and gynecological care to which the inmates were subjected.

1. Menstruation

In the same book, Neus Català added: "My whole group was given an injection to eliminate menstruation with the excuse that we would be more productive. This happened in 1944; and I did not have menses again until 1951" [11].

Menstruation is largely a forgotten topic when we think about the Holocaust and has commonly been avoided as an area of historical research. This is unfortunate, as menstrual periods are a core point of women's reproductive experience. Oral and written testimonies show that women felt ashamed talking about menstruations in concentration camps, but, at the same time, they kept bringing up the subject, overcoming the stigma. Jo-Ann Owusu in reference to menstruations states: *"Menses affected the lives of women victims of the Holocaust in several ways: for many, menstruation was related to the shame of bleeding in public and the discomfort of living with it. Periods also saved some women from being sexually assaulted. Likewise, amenorrhea could be a source of anxiety due to its effects on fertility, and on the future of being able to have children"* [21].

Prisoners, in addition to the fear and uncertainty of whether they would regain their fertility if they survived, suffered the loss of menstruation as a psychological attack to their feminine identity [22]. Upon entering the camp, prisoners were given shapeless clothing and had their heads shaved. During the imprisonment they lost weight that affected their hips and breasts, two areas commonly associated with femininity and body image. All those changes led to the situations in which those women started to question their own identities. Erna Rubinstein reflects on this

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concept in her memoir *"What is a woman without glory on her head, without hair? And, a woman who doesn't menstruate?"* [23]. All constituting a paradigm of depersonalization.

Having to face with this physiological phenomenon, there were supplies at that time such as sanitary pads designed to alleviate the "inconveniences" of menstruation. However, the experience in the concentration camps meant that menstruation was difficult to avoid or hide. Rendering menstruation so cruelly visible took many women by surprise and made them feel alienated. An additional obstacle was the lack of sanitary pads and lack of opportunities to wash-up. Trude Levi, a Jewish-Hungarian kindergarten teacher stated on this subject: *"We don't have water to wash ourselves, we don't have underwear. We can't go anywhere. Everything sticks to us, and to me, it may be the most inhuman of all. At that time, many women had menstrual periods that were inhumane"* [24].

The humiliation was even greater in the struggle to find rags that could serve as sanitary pads. Julia Lentini, a 17-year-old gypsy girl, described in her testimony how women had to learn tricks to survive menstruation in the concentration camp and referring to the fact she said: *"You took the underwear they gave you, you tore it and made little rags, and you kept those rags as if they were gold... you rinsed them a little, put them under the mattress and dried them, then no one else could steal the rags*". These rags were precious and therefore not immune to theft [21].

The alternative use of other materials as pads was also considered by prisoners. Gerda Weissmann (1924-2022) stated *"They had to look for small pieces of paper and some similar items under the toilets"* [25]. The rags had their own microeconomics. In addition to being stolen, rags were given away, loaned, and traded. Elizabeth Feldman de Jong (1916-2009) reported the value of second-hand rags and the importance of menstruating or not. Not long after her arrival at Auschwitz, her periods disappeared; however, this was not the case of her sister who continued to menstruate each month. Experiments involving injections into the uterus were common, but if a woman was menstruating, doctors often avoided to perform procedures since they considered this condition as disturbing. Elizabeth Feldman, as many other women in the camp, was called in for experimental surgery, but out of serendipity she put on her sister's underwear and showed it to the doctor, indicating that she was menstruating, and as a result she did not undergo surgery. Elizabeth realized that she could use her sister's condition to save herself from experimentation and she did this three more times at Auschwitz [21].

Occasionally menstruation protected from rape. Lucille Eichengreen (1925-2020), a young German Jewish prisoner, recalled in her memoires that during her incarceration in a Neuengamme satellite camp in the winter of 1944, she found a scarf and planned to use it. However, she worried that she would be punished for possessing a forbidden object; therefore, she hid the scarf between her legs. Later, a German guard tried to rape her, he groped her between her legs and felt the scarf. The guard exclaimed, *"You dirty useless whore! You're bleeding!"*. This misinterpretation protected her from rape [26].

After liberation, most of the women who suffered amenorrhea during the concentration camp confinements eventually began to menstruate again. The return of their periods was a cause for joy as menstruation became a symbol of freedom.

Despite these personnel testimonies, the fact is that amenorrhea occurred in 94.8% of women during imprisonment and just 0.6% of women remain with their periods longer than 4 months after internment. After liberation, all but 8.9% of the women resumed menstruations within the first year and most importantly, fecundity following liberation was not significantly affected by the imprisonment nor was there a significant increase in spontaneous abortion, ectopic pregnancies, stillbirths, or other pregnancy or gynecological complications. Thus, imprisonment in German concentration camps during the Holocaust resulted in enormous emotional and psychological changes among survivors and the analyzed data has revealed abrupt changes in short-term menstrual function but little long-term physical damage to reproductive function [27].

2. Sterilization

On July 7, 1942, Heinrich Himnler, chief of the Kriminalpolizei (Criminal Police) and Minister of the Interior, delegated doctors Carl Clauberg, and Karl Gebhart, together with the main Concentration Camp Inspector Richard Glücks to develop the most cost-effective method of sterilizing millions of Jewish women in the least possible time. Carl Clauberg designed the Block 10, a section for experimental procedures, where he developed an inexpensive and effective mass sterilization method consisting in the injection of a caustic substance through the cervix in order to block the fallopian tubes. These experiments predominantly included women between 20 and 40 years of age who had already delivered children. Firstly, an opaque liquid was instilled to confirm by X-rays that there was no previous obstruction or abnormality. Then, formalin mixed with novocain was injected. This procedure was repeated commonly for three times in the course of several months, but some women required up to four or five injections. The goal was to create adherences in the fallopian tubes, which would be blocked in about six weeks [28].

Other "affordable" options for mass sterilization included radiation therapy and surgery. Women, in the first case, received high doses of radiation to the ovaries, causing severe burns and occasionally symptoms of peritonitis. After exposure to radiation therapy, the ovaries were surgically removed for anatomical studies to determine the effectiveness of radiation in destroying ovarian tissue. Dr. Horst Schumann, who had already run euthanasia centers in Grafeneck and Sonnenstein, was primarily responsible for the X-ray sterilization method. Other women underwent surgical sterilization under epidural anesthesia. All those cases constituted the first trial of mass sterilization as part of the genocide perpetrated by the Nazi regime. Nazi collaborators were later sanctioned in the Nuremberg Courts [29].

3. Oncology research

Professor Hans Hiselmann is an illustrative example of the relationship between the doctors of the extermination camps and medical research in German universities. The mass screening for precancerous cervical lesions, through colposcopy, was carried out for first time in 1943 in the Auschwitz camp by Eduard Wirths with the collaboration of Helmut Wirths, his brother, and professor Hans Hinselmann all from Hamburg University. If Eduard Wirths spotted any abnormalities, the cervix was removed and examined for precursors of cervical cancer in the

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Hamburg laboratory of Helmut Wirths under the responsibility of Hinselmann [30]. This joint-venture illustrates the dark relationships between the physicians who conducted unethical experiments and the high level of medical research at the German universities. Hans Hinselmann should be remembered not only as a key player in the development of colposcopy, but also as an accomplice in crimes against humanity. Therefore, it is mandatory to know what tortures and atrocities were committed to promote the development of colposcopy [31].

Professor Hans Hinselmann sponsored the first German conference for colposcopy and the study of precancerous lesions of the cervix and published the first paper on colposcopy in October 1925 – this granted him recognition and popularity in Europe [32]. However, in 1937 in Berlin other gynecologist colleagues criticized the colposcope, claiming that experts could identify suspicious lesions without the use of that device. Hinselmann accused doctors who did not use colposcopy of being responsible for the deaths of 400,000 women worldwide each year caused by cervical cancer. The later collaboration with the SS chief physician, Eduard Wirths, was probably linked to the fact that Wirths had studied gynecology under the tutorship of Hinselmann during his medical studies [33].

Adélaïde Hautval, a French intern, deported for helping Jews and assigned to the experimental medical block 10 at Auschwitz [34], believed that Helmut who went to Auschwitz in 1943 and not Eduard Wirths was the actual promotor of these experiments. The study protocol indicated the surgical removal of the cervix in Jewish women where changes were observed during colposcopy. Dr. Adélaïde Hautval described the experiments as follows: "*The aim of the experiment was to detect precancerous conditions of the cervix that was subjected to colposcopic examination. First, the cervix was examined in its natural state, and then special reagents, such as acetic acid and an iodine compound, were applied, rubbing the cervix. In the case of a change in the cervical squamous epithelium, it would show a whitish reaction (coagulation) to the first reagent. Uncertain cases had to be treated as if they were confirmed cases. If the test was positive (positive reaction to acetic acid), an isolated amputation of the portio vaginalis was performed. The excised samples were not sent to Munich, but to Hamburg-Altona, where Hans Hinselmann and Helmut Wirths were studying them for precancerous lesions*" [35].

In her testimony, Adélaïde Hautval described the high frequency of postoperative bleeding. It was not just the poor physical conditions of the Auschwitz inmates that facilitated such complications but the Wirths brothers' surgical techniques. It is worth highlighting the attitude of Dr. Adélaïde Hautval in the Nazi era refusing to participate in Dr. Wirths' experiments [36]. At first glance, the study may appear relatively harmless and does not appear to be against the interests of the person in question. Pre-cancer screening could be beneficial for the inmates. However, all the uncertain cases were operated on, including the negative ones. In addition, the protocol consisted in removing the entire cervix, when a simple biopsy of the affected part would have been sufficient; therefore, she refused to continue participating in those experiments. In her testimony, Dr. Adélaïde Hautval related that Dr. Wirths asked her for an explanation of the reasons of her refusal to help with the operations and perform anesthesia and she gave him a short answer: *"C'est contraire à mes convictions"* "because it is against my beliefs" [37]. As a result, she was sent to Birkenau and later to Ravensbruck and through a combination of luck and help from German communist prisoners, Adélaïde Hautval survived [35].

4. Reproductive anatomy and physiology

Another example illustrating the connections between the death camps and the university hospitals were the studies carried out by the physiologist and anatomist Hermann Stieve (1886-1952). Professor Stieve investigated the relationship between stress and the ovarian, menstrual and reproductive cycles using inmates of the Plotzensee prison (Berlin). The subjects of Stieve's experiments were young women executed at Plötzensee prison, some of them belonging to the German resistance (Red Orchestra), for example Lianne Berkowitz [38]. The identity of the victims of the Nazi period is now known thanks to the tracking of legal records used to identify those who ended up on the worktables of the regime's anatomists. Liane Berkowitz was one of 182 women whose bodies were analyzed by Hermann Stieve, who at the time was a recognized expert from the University of Berlin [39]. Faced with the accusations that he had used bodies of political activists, Stieve stated many times that he had only used bodies of "dangerous criminals" [40]; he underlined that he had never carried out studies on bodies of political victims, but transferred them for direct cremation instead [41]. He also asserted that he had directly rejected the bodies of "*Die Männer des 20. Juli*." (the 'men of the 20th of July*)* who had been executed after their plot to kill Hitler in 1944 [42]. Finally, the university and Soviet administration withdrew all insinuations of unethical conduct [43].

The work of Hermann Stieve was revisited by William Seidelman who published in 1999 in Dimensions: A Journal of Holocaust Studies "*The Holocaust Medicine and Murder in the Third Reich*". Seidelman reveals in his work some details about how Professor Stieve worked closely with the Berlin prison where the executions were carried out: *"When a woman of reproductive age was to be executed, Stieve was informed, a date was decided and the prisoner was informed when she was going to die"* "*Stieve was particularly interested in the effects of stress and psychological trauma on the menstrual cycles of convicted women*." [44].

The massive number of executions carried out in Berlin during the war years, which at that time included an unprecedented number of women, allowed Hermann Stieve to intensify his research on human female organs. Before each execution a driver was sent from the Berlin Anatomical Institute to collect the bodies immediately after death and, subsequently at arrival to the institute the tissues and organs were removed and prepared for histological examination [45].

A letter preserved in the German federal archive indicates that Stieve visited the Plotzensee prison in 1942 to negotiate the time and day of the executions. Stieve advocated for a time frame for executions that would still allow tissue samples to be processed on the same day. Hermann Stieve was thus able to publish histological images of the human ovary of exceptional quality and also investigate the correlation between morphological outcomes and the stresses of imprisonment and death row in journals of anatomy, gynecology, and general medicine, both during and after the war.

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5. Psychosomatic medicine

Various sources suggest that the Institute of Anatomy released all bodies of execution victims from prison, even if they were not needed for research or teaching. Many of these bodies were taken directly to the crematorium by an anatomy technician, as the Institute of Anatomy simply would not have been able to preserve and store the bodies of all execution victims [45].

Hermann Stieve used cases from Plotzensee prison to show that the chronic stress of a death threat or impending execution led to marked morphological alterations and degenerative changes in the ovaries in most of the executed women. He also encountered what he named "*Schreckblu tungen"* (literally, "shock bleeds"), that is, abnormal uterine bleeding caused by a purely mental trigger, in those cases usually linked to the announcement of execution. These findings led Stieve to propose what today would be called a psychosomatic effect and hypothesize about a direct influence of the autonomic nerves on the ovaries.

Stieve's research was highly respected by the German scientific community of his time, including leading gynecologists such as Hugo Sellheim (1871 – 1936) and Walter Stoeckel (1871-1961). In fact, Stieve's results are still cited, without criticism, in the current literature on psychosomatic effects on reproduction. Hermann Stieve was not condemned by the courts or prosecuted, and continued his career, like many other scientists who worked with and for the Nazis. In fact, he remains a "posthumous honorary member" of the German Society of Gynecology and Obstetrics. Today, much of his studies are still considered valuable—i.e. he demonstrated with scientific evidence that the rhythm method was not effective in preventing pregnancy. However, his work, despite having been acquitted by university audits and Soviet courts [46], is considered contaminated by his effective collaboration with the Nazi regime, particularly in relation with its later genocides.

The Nazis imprisoned and executed many of their political opponents, and their corpses became research material. But Stieve was not the only scientist suspected of using the bodies of political activists; it is commonly known that many German and Austrian anatomists willingly benefited from the increasing supply of cadavers during the "Third Reich." Of the existing 31 anatomical institutes at universities in Germany and its occupied territories between the Nazi period (1933-1945), all of them - without exception - received bodies of persons dead in the execution chambers [47,48]. The only recorded rejections were due to the fact that corpse storage capacities were exhausted [26].

In conclusion, the majority of health care providers, dragged in the Holocaust reality, had no other option but to participate in iniquitous, atrocious acts; living in such perversely cruel times as the Second World War meant that the health professionals constantly had to choose between life and death. Most of the actions and choices were made by ordinary people, by common health professionals in a distressing period of human history. Finally, one must keep in mind that it is of utmost importance to face the Holocaust and weigh the medical progress and the scientific standards as well as the implications for public policy that emerge from them.

In the past eighty years, the world has experienced several major crises including permanent local or regional wars and episodical pandemics. These risks wear down much of the progress the world has made over the past years. Moreover, the division into geopolitical and economic blocs increases the menace of a repetition of the historically notorious times. In an interconnected world where conflicts in Europe generate famine in Africa, where religion is a weapon, where a pandemic can lock the world down, where pollution cause fatal diseases, where deforestation and CO2 emissions cause clime changes and rising of the oceans' levels, the risk of losing the present welfare state cannot be minimized. The only actual option to reduce these risks is international collaboration. This is simply the only real alternative to achieve a more reasonable and resilient future.

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Conflicts of interest

The authors report having no conflicts of interest.

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