**Seven Decades after the Nuremberg Trials: The Proper Policy Regarding the Thin Line Between Care and Clinical Trial in Israel**

[LIST THE FULL NAMES AND INSTITUTIONAL ADDRESSES FOR ALL AUTHORS​​​​​​​]

[INDICATE THE CORRESPONDING AUTHOR]

**Abstract**

**Background:** Medicine developed as a profession that provides treatment, conducts research, and delivers teaching services. However, this combination may lead to a violation of patients’ rights and create difficulties in obtaining informed consent before participating in clinical trials. A growing body of bioethics and health policy literature that began to take shape after the horrors of World War II emphasized the importance of distinguishing between the roles of physician-researcher and physician-therapist. Because medical experimentation on human subjects was a significant part of Nazi medical practices, it was expected that a cautious policy regarding that field would be developed because of the lessons of these horrors. We examine the distinction made in the discourse and in medical practices between clinical trials and treatment in an attempt to assess the feasibility attributed to a possible continuum between the medical practices of Nazi physicians and the practices of conventional medicine, which refers to any medicine not in the category of Nazi medicine. This possible continuum is referred to in the article as a “continuum concept.”

**Methods:** We designed a qualitative study that included analysis of archived documents, Jewish press documents from the period, and in-depth, semi-structured interviews with key Israeli personnel involved in the field of medical experimentation on human subjects between November 2014 and November 2017.

**Results:** The study revealed that Nazi medicine was perceived as both traumatic and a threat to the Israeli physician-researcher, and it led to increased blurring of boundaries within medicine. Israeli physician-researchers chose to present the therapeutic elements of their experiments, using practices that blurred the boundaries between clinical (care-oriented) medicine and experimental (research-oriented) medicine.

**Conclusions:** We discuss the implications of these findings in order to better understand components that are important to consider when formulating both health-approach and health-regulatory policies. Integrative health policy should include aspects related to the inherent structure of medicine and its various components, including blurred boundaries between medical care and research, which was characteristic of Nazi medicine, particularly during the Holocaust.

**Keywords:** Treatment-experimentation distinction, Nazi medicine, Clinical trials, Continuum concept, Human subject rights, Regulatory research policy

**Background**

The combination of treatment, research, and teaching in the physician’s professional activities contributes to promoting health in individual patients, to the development of medical science, to optimizing future treatment options, and to fostering training of future caregivers. Clinical treatment and medical research (which includes clinical trials) have long been intertwined because of the constant necessity of finding innovative medical solutions to patients’ needs [1, 2, 3]. The misuse of clinical trials on human subjects, however, has reaffirmed concerns inherent to that field [4, 5, 6, 7]. These concerns have intensified in modern medicine, where additional stakeholders have been added to the field of medical clinical trials [4, 5, 8].

Bioethical principles, which began to take shape after the horrors of World War II, led to the strengthening of human rights in general and the rights of patients in particular and emphasized the importance of distinguishing between the role of physician as researcher versus physician as therapist [4, 5, 8]. The State of Israel was established out of the ashes of the Holocaust, and the specters of the Holocaust’s memories have been etched on the Israeli consciousness. Nevertheless, various incidents have been exposed over time that demonstrate abuse during the conduct of clinical trials [7, 9]. These occurrences undermined the rights of the human subjects, especially those belonging to disadvantaged populations such as children, prisoners, soldiers, new immigrants, distressed patients, and the elderly, and raised significant ethical, social, and policy questions. In addition, the centrality of the Holocaust to the Israeli mindset and Jungian consciousness might lead us to conclude that the unambiguous perception of Nazi medicine as a moral horror evoking extreme revulsion and actual existential fear (referred to as the “horror narrative”) would lead to the development of careful and prudent policies to prevent the blatant abuse of the rights of participants in the domain of Israel’s medical research. In this respect, the current research seeks to examine what we refer to as the “continuum concept.” We use this term to refer to the presence of a possible continuum between “Nazi medicine” (and its associated clinical and experimental practices) and “conventional” or “normal” medicine, which we use to refer to any kind of medicine not associated with Nazi medicine. More specifically, our research seeks to investigate the policy development of clinical trials in Israel and examine the effect of the continuum concept in the course of the field’s development.

The theories that have been developed regarding the nature of the relationship between the therapeutic and the experimental domain primarily concern the question of needing to separate them into two distinct areas based on differing sets of principles. This issue stemmed first and foremost from the various goals to which the experimental field is directed [1, 5, 10-13]. The goal of clinical trials is to obtain knowledge for the advancement of medicine and the benefit of unspecified future patients, whereas medical care is aimed at promoting the well-being and health of existing individual patients. In addition to the difficulty in defining and delineating these two fields, inconsistent terminology used in the development of clinical trials leads to inaccuracy and confusion [4, 5, 10, 13]. Thus, by way of example, global regulation has adopted terminology such as “clinical trials” as opposed to “medical experimentation” and “participants” instead of “human subjects.”

It is claimed that this terminology inserts ambiguity and increases the difficulty of separating between the experimental and therapeutic domains [4, 5]. In this article, we will use the term “clinical trial” to describe an experimental practice that involves humans as participants, thereby distinguishing the practice from medical experimentation on human subjects. The double-blind randomized format (the gold standard) of clinical trials examines experimental medical intervention in an experimental group compared to a control group that is not afforded the experimental intervention. Neither the physicians nor the patient-participants know which of the participants are assigned to the experimental intervention group and which are not. The clinical or biomedical experiment is designed, like the clinical trial, to generate knowledge and promote medicine, but it also includes research that does not include people as participants. Therefore, a clinical trial is a subcategory of biomedical research [4].

Many discussions held to promote primary legislation in Israel have dealt with the definition of “medical experimentation on human subjects” and have testified to the difficulty of defining and distinguishing it from “medical treatment.” In the discussions on one bill, a representative of the Ministry of Health’s legal bureau said the following:

In fact, there is a complex dilemma regarding the definition of “medical experimentation on human subjects.” It can be defined by the type of actions that are performed and who they are performing it on, and it can be defined as a way of looking at everything someone does within the research arena. Or, perhaps, or in some areas of research you can use all kinds of combinations of these two concepts. We have had serious deliberations within the Health Ministry over the years, and we have gone back and forth… [14]

The definitions of the terms “health” and “clinical trial” also have significance on the regulatory level. These definitions confer professional authority and expand or reduce the physician-researcher’s or physician-therapist’s discretion. In keeping with the biomedical perspective, there has been a significant expansion of the terms “health” and “clinical trial” [15].

The entry of pharmaceutical companies into the field of clinical trials has changed the dynamics between the designers of the field and those expected to be empowered to shape the field under the rubric of law and public opinion [5, 8, ]. Moreover, the conflicted interests of rapid and extensive marketing and the practices used to promote drugs have contributed to the difficulty of separating between the experimental and the therapeutic. Idit Chernovich, CEO of Pharma Israel, represents 18 pharmaceutical companies in Israel and said in a discussion at the Science and Technology Committee that “all studies on cancer, Alzheimer’s research…these patients receive the most innovative treatment, even when the drugs have not yet been registered in the State of Israel” [17].

The first international regulation of medical experimentation on human subjects is attributed to the Nuremberg Code and was a result of the Nuremberg trials at the end of World War II [4, 5, 13, 15]. The Nuremberg Code was launched after the doctors’ trial and was based on the foundation of bioethics, which is focused on the patient. This regulation was not a result of public health policy, which often involved the subordination of individual rights to the benefit of the public. Therefore, there are those who attribute the birth of bioethics to the horrors of Nazi medicine [5]. However, even before the Holocaust, certain religious denominations, particularly Roman Catholics under the leadership of the Pope, have been active in the field of bioethics, particularly when there has been concern that modern medicine might conflict with religious practice.

Some literature suggests that bioethics was born in the late 1960s and early 1970s, after the exposé of the Tuskegee syphilis study. In that case, physicians of the U.S. Public Health Service continued their research to observe the natural progression of syphilis in African-American men in Alabama under the guise of providing free health care from the U.S. government, even when it was known that there was an effective and available treatment for the disease [6]. Whether the field of bioethics is attributed to the Tuskegee syphilis study or whether it emerged from the remnants of the Holocaust, in both cases it is attributed to the failed conduct of medical experimentation on human subjects. It indicates the deep crack that has emerged following the misuse of experimental practice.

In Israel, clinical trials are shaped over time as a public health practice, but with the inherent need to use population studies for their implementation, the implications pertain to the individual. A comprehensive document that examined the state of medical research in Israel was published in November 2008 by the National Academy of Sciences and reinforces this conclusion. The document begins as follows:

Public health is the foundation for the existence and success of every modern society, therefore biomedical research is one of the world’s favorite research areas. It is recognized that biomedical research will help us understand the causes of disease and cure it. Promotes public health and... [18]

Since the early 1980s, concerns have been raised about the development of the “therapeutic misconception.” This concept was originally described as the inability of the participants in clinical trials to understand the significance of limitations imposed by the clinical trial on the physician-researcher, who is committed to the aims of the study and does not know whether each patient will receive the experimental intervention or will be assigned to the control group [11]. Studies have indicated that participants believe they will be assigned to the experimental arm, which will provide them the best treatment. The term “therapeutic misconception” has evolved to refer to a range of misunderstandings that may develop among the participants in the research framework. Those factors have legitimized the practice of introducing experimental treatments for use in the therapeutic domain [12].

**Methods**

This article is part of a doctoral dissertation investigating the development of medical experimentation on human subjects in Israel, where the phenomenon of misuse during the Holocaust is very present in the Israeli existence. The study was conducted according to uniform criteria formulated in the qualitative research field to ensure transparency of the process and increase the quality and reliability of the research [19].

**Interview design**

The study included a systematic analysis of archival documents from state archives, the Ministry of Health’s legal bureau, the Knesset archives, and the historical Jewish press. In addition, 45 in-depth, semistructured interviews were conducted between November 2014 and November 2017 in accordance with an interview briefing protocol developed to incorporate the attention to flexibility required for real-time dynamic interaction [20]. The study was approved by Zefat Academic College’s Ethics Committee, No. 41/14, and the Ethics Committee of the University of Haifa, certificate number 041/17.

**Participants and sampling**

The interviewees were selected according to purposeful sample methods using a high initial variance of theoretical sampling [21, 22]. A total of 45 subjects were interviewed: 18 were women and 27 were men; 24 were physicians; 8 were chairpersons of committees for approval of clinical trials or members of the IMA Ethics Bureau; 7 were regulators from the Ministry of Health, the Legal Department, or the Chief Scientist; 8 were bioethicists (half of these were jurists); 3 were representatives of the pharmaceutical industry; and 3 were representatives from the medical insurance sector. We obtained consent from all participants to use the views and perspectives they expressed in the interviews, revealing their professional identity and concealing their personal identity. All interviewees met the inclusion criteria (i.e., a significant and ongoing connection with the field of medical experimentation on human subjects in Israel and involvement in various aspects of its development) [19].

**Data collection and analysis**

The interviews were recorded and transcribed verbatim. After repeated readings, a holistic analysis was performed, leading to the identification of a number of themes. Personal anonymity was promised to the interviewees, who were designated only by category as P (physician), R (regulatory), B (bioethicist), I (representative of the insurance industry), or T (representative of the pharmaceutical industry) [23]. Eventually, a grounded theory was constructed using categorical content analysis as the major analytical tool, with structural analysis used as a secondary analytical mechanism [21, 22].

**Results**

The interviews provided a rare opportunity to examine the perceptions of policymakers and other relevant key figures of the field of medical experimentation on human subjects in Israel during a long period. The maximum variance we sought in interviewing was intended to enrich the findings and broaden the perspective in a way that would capture as comprehensive and reflective a picture as possible. A description of various aspects of the phenomenon of medical experimentation on human subjects, in light of the interpretation given by a wide spectrum of respondents who were dominant in this field, sheds light on the significance of the research. The process of framing the field of human clinical trials in Israeli society by means of interviews constitutes the integration of a continuum of consciousness and diverse contexts [24].

After thematic analysis, a number of themes regarding the development of medical experimentation on human subjects in Israel emerged from the overall narrative of the interviews. Several thematic categories were identified: the role of clinical trials, the boundary between care and clinical trials and between a physician-therapist and a physician-researcher, the academic culture of publish or perish, undefinable boundaries, the practice of recruiting patients for a clinical trial, and the relationship between the physician-researcher and the patient-participant. The categories that were identified and the various topics (subcategories) that emerged from them are presented below, with the findings backed up by the interviews [25].

**The role of clinical trials**

The interviewees attributed various functions to clinical trials. They all perceived trials as a tool that medicine uses to prove hypotheses about physiological processes and diseases in order to develop the appropriate means for prevention, diagnosis, or treatment. The interviewees also saw clinical trials as a means of bringing money into the state and into medical institutions and even as a tool to provide the most advanced treatments for patients and to help doctors find solutions for patients’ needs. This perception characterized all the interviewees, to some degree or another, regardless of their current occupation. An interviewee who was involved in lengthy regulatory procedures said, “Obviously this is a source that brings a lot of money into the country. Clinicians at the end of the day also want to have more clinical trials, because it improves the quality of medicine and makes it accessible to patients” (R4).

Similarly, a young physician who had been involved in clinical trials for several years mentioned the “answer” provided to patient-participants when physician-therapists use clinical trials. She said, “We want the State of Israel to conduct. ...The arrival of pharmaceutical companies to Israel allows people who have no medical solution today to receive treatment by their doctor.” She added, “The Health Ministry is also aware that it is not worthwhile to smuggle the pharmaceutical companies...patients need life-saving drugs because they have nothing to lose, but if the companies run away, everyone will lose” (P22).

According to a leading representative of a European pharmaceutical company in Israel,

The understanding is that there are not enough new drugs out there, so even the physician defines the trials as a therapeutic option...that is, they say you have first line, second line and they recommend that in addition ... even in the first phase, the oncology patients-participants have no other option, so this is what we called a “therapeutic option”...and therefore it was of great importance to bring the first phases to Israel... (T40)

**Clinical research as part of the professional socialization process**

All interviewees with medical training considered research as an integral part of the medical profession. They felt that their role was not only to treat but also to conduct research and engage in teaching. Some of them even emphasized that the commitment to fill this “professional trinity” is part of the basis for the medical profession. The interviewees, however, claimed that they did not have the time required to invest in the three areas and reported that they operated in the same order of priorities: treatment, research, and teaching. One regulator who served in many positions during his professional career said, “I was taught that every physician has three duties: one is the treatment, the other is to teach the next generation and to promote the profession by research” (R29).

The interviewees noted that the process of formal training includes a clear message that research and conducting clinical trials are part of the physician’s work. However, their training does not include professionalization in the experimental domain, either in theory or in terms of skills. Some interviewees thought that because clinical research requires a different way of thinking, it cannot be taught. For example, a physician who has been conducting fertility clinical trials for years said, “We have never been taught how to do research, but there are things that cannot be taught, like this ‘passion’ to know and ask questions. Most physicians want to come and do their work and go” (P36).

**Clinical research as a refuge from clinical practice**

An experienced physician felt that the therapeutic domain involved demanding requirements in the occupational and emotional aspects. She said, “At the same rooms I examine patients and I do my research, and obviously it comes at the expense of regular work, and when you come to recruit a patient, it takes a long time.” She added, “Sometimes patients see the academic degrees and think that this shows the quality of the clinic, but sometimes it is not the index, like the case of a physician running away to the research” (P39).

A chairman of one of the Helsinki committees said, “The burden in the ward, not just the number of patients, but also the emotional burden, is difficult, and by doing research you have quiet and you can peacefully work” (P35).

**Clinical research as a vocation**

Many interviewees considered clinical research as a vocation and an end in itself that constitutes an advanced stage in the development of the physician.

A director of a large medical center said, “A person who decides to devote himself to clinical research has a spark in his eyes, and I think that his patient’s faith will be unlimited” (P21). A veteran physician said, “When the physician is more confident in himself and his professional skills, he can be freer to professional progress as a researcher and to realize himself” (P34).

The interviewees referred to clinical research as a personal mission that requires considerable investment from physicians and therefore entitles them to esteem and trust.

**A “publish or perish” culture**

Interviewees who were part of the academy expressed the great pressure they feel to conduct research and publish articles. In this context, an interviewee from the Ministry of Health said that in light of the events that took place in Israel, three components are driving the field of medical experimentation on human subjects: “Prestige, professor degree, and money! These are the three things that cause researchers to betray their commitment and violate patients’ rights” (R20).

The physicians said they had been particularly affected by the academic pressure to publish research articles. A physician who serves as chairman of the Helsinki Committee at a small medical center said, “We need to advance in academia in order to advance in managerial positions at work, and what determines professional advancement is research and publication of articles.” She gave an example of something she was told two years earlier: “If within a year you do not publish three articles, we will take your academic degree. It is really stressful” (P26).

Another interviewee noted that stress was a modern reality and that the editors of the main professional journals have made the important decision not to receive articles that have not been approved by ethics committees. “Researchers want their grants. The need to publish that drives researchers is also withheld. They need the approval—that is what stops them and not the virtue of compassion and ethics” (P18).

**Undefinable boundaries**

The interviews revealed the difficulty of clearly distinguishing between the experimental and therapeutic domain—for example, “the difficulty in deciding when an experiment could turn into standard of care” (B13). On the other hand, there were interviewees who believed that such a distinction was not essential to medicine in Israel. A regulator who had treated patients in the past testified that until the late 1960s, no attempt was made to separate the experimental and the therapeutic domains. He said, “When there was no good treatment in the past, we checked everything we thought could work. There were futile treatments, which had no scientific basis. It was diminishing over time” (R19). Moreover, a representative of the pharmaceutical industry considered the difficulty of distinguishing between an experiment and therapy as a sign of advanced medicine and a welcome growth: “It is not always possible to say whether the treatment the patient is receiving is an experiment, especially if for the patient it is therapy; on the contrary, if it is difficult to decide, it is a sign that there is good, rapid progress” (T30).

The interviews revealed that the blurring of the boundary between experimental and therapeutic practice was most evident in medical procedures such as surgical operations. One interviewee, a chair of the Helsinki Committee, said, “In our hospital, when you say you’re already doing it for everyone, it’s no longer an experiment, so there’s no problem. There are far fewer rules about procedures and it is much more amorphous” (P11).

A regulator involved in the legislative process said, “Regarding surgeries, it is common that after a while it becomes an accepted method. The surgeons will have to learn to conduct experiments, with all that entails…An attempt to create an orderly process of legislation regarding the introduction of procedures for medical use was met with overwhelming opposition from the Director General of the Ministry of Health” (R28).

**The practice of recruiting patients for a clinical trial**

Most of the interviewees presented the unique nature of the physician-patient relationship as a dependent relationship of two unequal parties; for example, “...The patient depends on his physician, obviously he will want to please him...” (P37). Many interviewees thought that certain patients would agree to participate in clinical trials only because of their relationship with the physician-therapist; for example, “...A patient is often dependent on the physician, so his willingness to please the physician could lead him to comply with his requests” (B8), and “I often asked myself whether it was because they wanted to participate or that they felt compelled to participate” (P14).

Nevertheless, all the interviewees who were involved in clinical trials presented the practice of recruiting their patients as common and even essential. In addition, some interviewees said they used tactics that would encourage patients to participate in experiments. A female interviewee said, “I do not use the word *experiment*, because the word *research* sounds like something scientific or academic, a higher word, and an end in itself. An experiment connects directly to guinea pig and the Holocaust. This is the impression I have” (P11). On the other hand, a medical director noted, “The clinical trial does not allow personal concern; it may reduce the patient’s trust” (P21). A regulator who had engaged in research in the past emphasized, “I told you, I did not see a problem even in those who went through a concentration camp to volunteer for an experiment; it depends on how it is presented and on the trust the physician acquires” (R29).

**The physician-researcher and patient-participant relationship**

The nature of the relationship between a physician-researcher and a patient-participant has been the subject of extensive writing, since the ability of the physician-researcher to provide patient-participants with the optimal medical care suited to them or even to control the experimental process is significantly limited in the research framework. This issue has many implications, such as randomized double-blind clinical trials, early termination of an experiment following early findings, informing participants of incidental findings discovered during the trial, access to medical care after completion of the trial, and provision of attendant care. The decisions to be made by the physician-therapist, whose initial loyalty is to the patient, may be different from that of a physician-researcher, whose primary loyalty is to achieve the research goals while safeguarding the participant’s rights. The interviews presented a complicated picture, indicating a continuation of the therapeutic relationship in the experimental domain.

A physician who was a partner in ethics committee discussions said, “I think that every physician who is involved in clinical trials should remember what terrible things can be arrived, and sometimes it does not come from a bad place. We all fall in love with our studies, so we lose objectivity at some point. There is no doubt that a sharp eye on the outside must stand up and put restraints” (P14). On the same issue, another physician said, “Science will have solutions for all diseases, but these solutions will not come if we do not continue to conduct clinical trials all the time; it is the supreme interest of every individual and of the public. As a physician, I mediate between the pharmaceutical companies and the patient, and between him and science, and accompanying the patient on this curved path” (P1). There were interviewees who drew a picture of a unique and complex relationship between the physician-researcher and the patient-participant. A bioethicist-jurist said, “The very fact that in the second, third, and fourth phase participants need a medical intervention for their condition, they hear only the benefit, especially in front of the physician-researcher” (B15). The interviewees who served in a dual role did not usually separate these two relationships. An interviewee who used to recruit his patients for an experiment said, among other things, that “...It is not that one should fear as in the time of the Nazis; they did not see the patient as patient, but rather the science was in their minds and the Aryan race” (P34). This interviewee did not know why he chose to talk about Nazi medicine when he talked about recruiting patients. After hesitating a little, he said, “I think we should leave the subject of the Holocaust dim, we must leave it as a memorial candle that will never be extinguished ...We have modern view today, so the generation that experienced these things did not understand them. We did not experience it, but we understand” (P34).

The interviewees spoke frequently about their relationship with their patients and with participants. They took the first relationship more personally and felt a greater commitment. However, many interviewees continued to call a participant “my patient,” even when they talked about the course of a clinical trial. In other cases, the interviewees named the patient “the participant” after the end of the clinical trial. In addition, the practice of recruiting patients for an experiment was presented in interviews as essential and even necessary. Sometimes it was difficult to say with certainty whether interviewees explained their activity in the setting of the clinical trial or of clinical care.

**Discussion**

The interviews demonstrated very clearly the blurring between experimental and therapeutic practice. The patient-participant’s need for treatment leads to blurring the boundaries between the therapeutic and the experimental domain.

The dual role of the physician-therapist alongside the physician-researcher significantly intensified that blurring. And when the physician-therapist recruits patients for clinical trials, the boundary is almost completely erased. This inherent internal blurring within the medical profession has been sharpened and has stood out in shocking events like Nazi medicine or the Tuskegee syphilis study, but it is an inseparable part of the profession and its conduct [1, 5, 10].

Despite the importance we see in illustrating the blurring between clinical trials and clinical practice through Nazi medicine, we would like to emphasize that there was not a real clinical relationship in the concentration camps, unlike other health care settings in Nazi Germany. In addition, even before World War II, many physicians, not only Germans, did unethical clinical experiments. Interestingly, Japanese physicians conducted experiments at least as unethical as those of the Nazi physicians during the Second Sino-Japan War (1937-1945) and during World War II, but they were not as prosecuted as Nazi physicians [26].

The lack of absolute certainty in medicine, as well as the need to continue finding effective medical interventions for various medical conditions, leads to the conclusion that the blurring between the two fields is inevitable and constitutes an inherent part of the medical profession [5, 8, 12].

Various variables have led to the intensification of this blurring, such as the difficulty of defining an experiment unequivocally, the entry of various stakeholders, relational concepts, and the complexity of modern medicine. These boundaries are constantly changing and evolving in light of rapid scientific and technological developments, which make the boundaries fluid and permeable. Thus, physician-therapists who function also as physician-researchers find themselves moving from one field to another easily and unintentionally. Physicians see themselves as mediators between all the actors in the medical domain and between social and political forces. As mediators, physicians are under pressure from patients and the public on one hand and from pharmaceutical companies, academia, the medical institution, and its supervisors on the other [27].

The interviews revealed a paradoxical finding regarding patients’ trust. It has been found that experimental practice is perceived as a progressive professional stage that grants the physician-researcher prestige and esteem and even acquires a great deal of trust from the public and from patients. However, this study shows that it is difficult to maintain patients’ trust in the clinical trial setting, in which the primary goal is to achieve the research objectives. Patients, who serve as a tool to achieve these objectives, therefore may be harmed when their expectations are not realized. The gap between the patient’s expectations and the nature of the research practice may ultimately harm the patient’s trust in the physician-researcher. The lack of a distinction between therapeutic and experimental practice may lead to the result that the trust damage of the experimental domain will also spill over into the therapeutic domain and the medical profession in general. A prominent finding of this study is that contrary to the professional importance attributed by physicians to clinical trials, when they talk about their experiments or recruit patients, they try to obscure the experimental elements of the clinical trials and emphasize the therapeutic elements. It is interesting to note that the subject of Nazi medicine is sometimes associatively linked to the blurring of experimental and therapeutic practice. This suggests that this inherent blurring, which has always accompanied the medical profession, is liable to break out and be revealed with full strength in a notorious event such as the Holocaust and undermine the foundations of the profession beyond recognition.

Moreover, the less interviewees are open to discussing the horrors of Nazi medicine and its possible implications for the application of medical practices in Israel, the more likely it is that they will find it difficult to accept the idea underlying the continuum concept. Surprisingly, interviewees who found it hard to accept and even to consider the continuum concept implemented practices that increased the blurring between care and clinical trials just as much as those interviewees who found the continuum concept considerable. The purpose of these practices is to reduce the negative connotation regarding experimental practice among the general public and to increase the chances of recruiting participants for clinical trials. However, physician-researchers who have been involved in ethical discussions over time have shown greater openness to consider the possible continuum between Nazi practices and the practices of “normal medicine,” including their own. The negative connotation of medical experimentation on human subjects, reinforced by events such as the Holocaust, has led Israeli physician-researchers who are motivated by good intentions to manipulate and to lack transparency.

**Conclusions**

The health system in general and the field of medical experimentation on human subjects in particular must be based on solid and stable foundations. A stable healthcare system must include routine conduct of medical experimentation on human subjects. In addition, an efficient and appropriate healthcare system has to use comprehensive and in-depth data, as suggested above. Only the combination of all these can lead to achieving goals such as branding the medical profession as a reliable and leading health profession, public trust in medicine, and public willingness to contribute to achieving the goals of medicine. This balanced and responsible policy may contribute to the full realization of the health system’s potential, achieve long-term goals, and significantly improve health outcomes.

It seems that the debate about where to draw the thin line between medical care and clinical research has never been satisfactorily resolved [13]. Following the criticism aroused by this issue, this analysis calls to bring into account in-depth professional concepts with a developmental-social background, such as the continuum concept, as relevant and significant factors in designing both a comprehensive health approach and a tailored health policy. Because health policy is based, inter alia, on past experience, it should be situated within a broader debate that is tied to questions of medicine’s limits to indicate the transition from therapeutic to experimental practice—often accentuated by distrust and tense relationships.

**Declarations**

Ethics approval and consent to participate

Consent for publication

Availability of data and materials

Competing interests

Funding

Authors’ contributions

Acknowledgements

Authors’ information (optional)

**References**

1. Joffe S, Miller FG. (2008). Mapping the moral terrain of clinical research. Hastings Cent Rep. 2008;38:30-42.‏

2. Danziger K. Constructing the subject: historical origins of psychological research. Cambridge: Cambridge University Press; 1994.

3. Bromley E, Mikesell L, Jones F, Khodyakov D. From subject to participant: ethics and the evolving role of community in health research. Am J Public Health. 2015;105:900-8.‏

4. Emanuel EJ, Grady CC, Crouch RA, Lie RK, Miller FG, Wendler DD, editors. The Oxford textbook of clinical research ethics. Oxford: Oxford University Press; 2008.‏

5. Annas GJ. Questioning for grails: duplicity, betrayal and self-deception in postmodern medical research. J Contemp Health Law Policy. 1995;12:297.‏

6. Caplan AL, Jones James H. (1981 [1993]). Bad blood: the Tuskegee syphilis experiment. New York: The Free Press. BioSocieties. 2007;2:275-6.‏

7. Hassidim A, Kayouf R, Yavnai N, Panush N, Dagan D, Bader T, et al. Ethical standards for medical research in the Israeli military—review of the changes in the last decade. Isr J Health Policy Res. 2016;5:53.‏

8. Rothman DJ. Strangers at the bedside: a history of how law and bioethics transformed medical decision making. Oxfordshire: Routledge; 2009. p. 88-89.

9. Eyal H. Regulation of medical experiments on soldiers: the case of the anthrax experiments in the IDF. In: ,,,editors Regulation: law and policy. Tel Aviv: Faculty of Law, Tel-Aviv University; 2016. p. 346-311.

10. Kass NE, Faden RR, Goodman SN, Pronovost P, Tunis S, Beauchamp TL. The research‐treatment distinction: a problematic approach for determining which activities should have ethical oversight. Hastings Cent Rep.2013;43 Suppl 1:S4-S15.

11. Appelbaum PS, Roth LH, Lidz CW, Benson P, Winslade W. False hopes and best data: consent to research and the therapeutic misconception. Hastings Cent Rep. 1987;17:20-4.

12. Appelbaum PS, Anatchkova M, Albert K, Dunn LB, Lidz CW. Therapeutic misconception in research subjects: development and validation of a measure. Clin Trials. 2012;9:748-61.

13. US Department of Health and Human Services, National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). The Belmont report: ethical principles and guidelines for the protection of human subjects of research. 2013:45.‏

14. Joint Committee of the Labor, Welfare and Health Committee and the Science and Technology Committee. Protocol No. 4, the 17th Knesset. In the category: Bill of Medical Experimentation on Human Subjects (12 Dec 2007). [Published in Hebrew.]

15. Williams JR. The Declaration of Helsinki and public health. Bull World Health Org. 2008;86:650-2.

16. Easter MM, Henderson GE, Davis AM, Churchill LR, King NM. The many meanings of care in clinical research. Sociol Health Illn. 2006;28:695-712.‏

17. Science and Technology Committee. Protocol No. 11, the 20th Knesset. In the category: The activities of the Supreme Committee for Human Experimentation on Human Subjects, 2014 (14 Jul 2015). [Published in Hebrew.]

18. National Academy of Sciences. Report of the Steering Committee to Evaluate the State of Biomedical Research in Israel. Nov [Published in Hebrew.]

19. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19:349-57.‏

20. Carey E. Navigating the process of ethical approval: a methodological note. Grounded Theory Rev. 2010;9.

21. Charmaz K, Belgrave L. Qualitative interviewing and grounded theory analysis. In: Gubrium JF, Holstein JA, Marvasti AB, McKinney KD, editors. The SAGE handbook of interview research: the complexity of the craft. 2nd ed. Thousand Oaks, CA: SAGE; 2012. p. 347-65.‏

22. Strauss A, Corbin J. Basics of qualitative research: grounded theory procedures and techniques. Thousand Oaks, CA: SAGE; 1990.

23. Gentles SJ, Charles C, Ploeg J, McKibbon KA. Sampling in qualitative research: insights from an overview of the methods literature. Qual Rep. 2015;20:1772-89.

24. Goffman E. Frame analysis: an essay on the organization of experience. Cambridge, MA: Harvard University Press; 1974.‏

25. Côté L, Turgeon J. Appraising qualitative research articles in medicine and medical education. Med Teach. 2005;27:71-5.‏

26. Wispelwey BP, Jotkowitz AB. To repent or to rationalize: three physicians exchange letters on the ethics of experimentation in postwar medicine. Perspect Biol Med. 2013;56:236-43.

27. Tone A, Watkins ES, editors. Medicating modern America: prescription drugs in history. New York: NYU Press; 2007.‏ p. 185-211.

Petrini C, Alleva E. Incidental findings, genetic screening and the challenge of personalisation. Annali Dell’Istituto Superiore di Sanita. 2014;50:312-6.

Miller PB, Weijer C. Fiduciary obligation in clinical research. J Law Med Ethics. 2006;34:424-40.

McGhee G, Marland GR, Atkinson J. Grounded theory research: literature reviewing and reflexivity. J Adv Nurs. 2007;60:334-42.‏