



Physical assessment of tortures: Interobserver analysis of medico-legal degrees of consistency based on the Istanbul protocol

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ABSTRACT

The Istanbul Protocol section on medicolegal evaluation delineates the guidelines for the correct management of the physical examination and the methods of assigning the degrees of consistency. Considering that most cases exhibit highly heterogeneous lesions, the examiner is forced to rely on his own experience, and their evaluation may be very subjective. The purpose of this work is to understand how subjective such an evaluation may be and whether the “experience” factor, interpreted as years dedicated to this profession and the number of cases evaluated, is statistically significant. To this end, a survey containing eleven cases of pre-evaluated asylum seekers was sent to thirty Italian clinical forensic practitioners. The participants were invited to assign a degree of consistency to each case according to the Istanbul Protocol guidelines, besides answering a few questions regarding their professional record. The doctors were divided into groups based on the number of cases evaluated and the experience collected expressed in years, and then interobserver analysis was performed. Results showed that the Fleiss’ Kappa coefficient acquired significant values when attention was turned to the sub-samples composed of more experienced participants. Therefore, the introduction of appropriately trained health professionals – “experts in migrations and torture” – could lower the risks of misinterpretation and make the assessment as reproducible as possible.

1. Introduction

According to the United Nations High Commissioner for Refugees last report, by the end of 2020, almost 82 million individuals were forcibly displaced worldwide as a consequence of persecution, conflict, violence, or other human rights violations [1]. This included 48 million individuals displaced within the borders of their own countries and about 30.5 million refugees and asylum-seekers. Turkey, Colombia, Pakistan, Uganda, and Germany were the top five recipients of new individual applications worldwide [2].

Italy is a destination country for many people forced to flee their homes and is one of the highest recipient nations of migrants in the Mediterranean [3–7]. Once in Italy, migrants usually either continue to northern European countries or stay in Italy in the hope of obtaining the refugee status. After identification procedures through photo-signaling and fingerprints, asylum applicants were relocated and resettled on

the national territory, and a temporary residence permit was issued with a validity of six months, renewable. The legal processing of asylum applicants for refugee status in Italy follows international regulations, as stipulated by the European Union and the United Nations High Commission for Refugees. Applicants are examined through detailed interviews with the Territorial Commission, the Italian First Instance Determinative Authority, to decide whether the asylum seeker meets the criteria to be granted international or national protection [8–9].

The Municipality of the Metropolitan City of Milan and the University Institute of Legal Medicine have made the medico-legal assessment of victims of violence a key priority as part of a broader project aimed at protecting vulnerable people. Vulnerable people are intended to include unaccompanied minors, the disabled, the elderly, pregnant women, victims of trafficking in human beings, and patients suffering from serious diseases and/or mental disorders. A specialized team – composed of experts in clinical forensic medicine, ethno-psychiatry,

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anthropology, psychology and social work – is responsible for examining asylum seekers and assisting with their applications for asylum [10]. In September 2013, the Municipality of Milan approved a new protocol by municipal decree, which established an operational network in the Milanese territory that was tasked with assisting and caring for asylum seekers and vulnerable subjects. The members of the Protocol meet monthly to exchange information on interventions, aiming to improve needs and assessments of the traumatized and enable service providers to deliver adequate levels of assistance and protection [11].

The University Institute of Legal Medicine actively collaborates within this network. A thorough report is written on each evaluation and presented on the day of the hearing at the Territorial Commission. Full medical examinations of the alleged victims were performed during the clinical assessments. Final reports were drafted based on the consistency between the allegations of physical violence and the results of the external examinations, according to the Istanbul Protocol. In all cases, individuals were examined by forensic specialists and anthropologists. Interviews were conducted (often using a mediator or translator) to gather an initial history of the person, including the reasons they fled their country, detailed accounts of violent and/or traumatic events, and their health status [8–9,11]. As known, the Istanbul Protocol is an instrument for the investigation and documentation of torture or other inhuman, degrading, and cruel treatment. The medico-legal section of the Istanbul Protocol outlined the guidelines for proper physical examination management and methods for assigning degrees of consistency in cases of torture [12–13]. In everyday practice, the assessment of the compatibility of physical evidence with alleged torture is very challenging for the clinical forensic practitioner [14–39]. The examiners may therefore be led to subjectively rely on their own experience.

The Istanbul Protocol provides guidelines for the medico-legal evaluation of asylum seekers and/or victims of torture. However, are the proposed guidelines sufficiently comprehensive to ensure a uniform assessment of injuries by different examiners? The purpose of this work was twofold: to understand whether the experience factor (intended as the number of cases evaluated and the years of experience in this field) influences the evaluation and the final judgement; to assess whether conclusions according to the Istanbul Protocol are objective with statistically relevant significance.

2. Materials and methods

Thirty Italian clinical forensic practitioners who deal with investigations on asylum seekers on Italian territory were given a survey containing eleven cases of asylum seekers. All subjects included in the study must have completed their training in forensic medicine. The cases were chosen from the archives of the Institute of Forensic Medicine of Milan as the most significant, and the degree of consistency was unanimously assigned. The survey is organised into different sections. The first section collects information on the participant's professional experience and professional record regarding specifically the evaluation of individuals in the context of inhuman treatment and torture. Experience is measured as the number of years spent working as a clinical forensic examiner of asylum seekers who were victims of physical violence and the total number of these cases examined. They were then asked whether they had received specific training on the physical assessment of tortured victims.

The remaining sections have been dedicated to the assessment of alleged physical violence cases. In detail, the specific sections of the selected cases were organised as follows: a summary of the asylum seeker's narrative; a memo containing the main points (year of birth, reason for fleeing the country of origin, and the country's name; type of injury); a representative diagram of the reported corporeal injury distribution; detailed pictures and instrumental collection of the lesions. At the end of each case, the candidate was asked to indicate the degree of consistency as established by the Istanbul Protocol, from 1 to 5:

- degree 1 - Not consistent: the lesion could not have been caused by the trauma described;
- degree 2 - Consistent with: the lesion could have been caused by the trauma described, but it is non-specific and there are many other possible causes;
- degree 3 - Highly consistent: the lesion could have been caused by the trauma described, but there are few other possible causes;
- degree 4 - Typical of: this is an appearance that is usually found with this type of trauma, but there are other possible causes;
- degree 5 - Diagnostic of: this appearance could not have been caused in any way other than that described.

Descriptive statistics are provided from the data gathered in the first section, concerning professional experience. Then we focused on the answers for each case presented. Initially, descriptive statistical analysis was performed, considering the percentages of doctors who assigned a specific degree (1–5). This first step allowed to enhance the variability of the answers and graphically represent their heterogeneity. To assess whether heterogeneity was statistically significant, inter-rater reliability was calculated. For this purpose, the Fleiss Kappa coefficient was used [40]. Then the data was divided, layered, and the participants were compared based on the number of cases evaluated and the years of experience achieved. Finally, the general agreement among observers was calculated and subsequently layered, assuming a standard reference for the degree of consistency.

The involved subjects had given specific informed consent for the use of their data for research purposes. All the data provided in the survey was anonymised and unrecognizable.

3. Results

When asked to the participants “How long have you been working with asylum seekers?”, the answers were as follows: 12 participants answered less than one year (40%), 8 participants answered between 1 and 5 years (27%), 10 participants answered more than 5 years of experience (33%).

When asked to the participants “How many asylum seekers have you examined or how many medico-legal evaluations to asylum seekers who were victims of physical violence have you attended to?”, the answers were as follows: 14 participants examined or attended less than 24 evaluations (47%), 7 participants examined or attended to a number of evaluations between 25 and 49 (23%) and 9 participants examined or attended to >50 evaluations (30%). Table 1 shows the answers to the eleven cases of the survey.

When asked about specific training on these issues, all of them said that they did not perform it, except independently.

Then, the Fleiss' Kappa coefficient was calculated on all the data,

Table 1
Consistency degrees to the eleven cases given by the thirty participants.

Case #	Degrees of consistency				
	Not consistent	Consistent with	Highly consistent	Typical of	Diagnostic of
1	4 (13%)	18 (60%)	6 (20%)	2 (7%)	–
2	7 (23%)	15 (50%)	7 (23%)	–	1 (4%)
3	–	12 (40%)	12 (40%)	5 (17%)	1 (3%)
4	4 (13%)	17 (57%)	8 (27%)	1 (3%)	–
5	–	11 (37%)	18 (60%)	1 (3%)	–
6	3 (10%)	4 (13%)	17 (57%)	5 (17%)	1 (3%)
7	1 (3%)	12 (40%)	14 (47%)	1 (3%)	2 (7%)
8	2 (6%)	5 (17%)	13 (43%)	8 (27%)	2 (7%)
9	–	2 (6%)	5 (17%)	21 (70%)	2 (7%)
10	1 (3%)	–	2 (7%)	16 (53%)	11 (37%)
11	–	1 (3%)	5 (17%)	7 (23%)	17 (57%)

resulting to be equal to 0.17 (slight agreement). The agreement among the complete consistency judgments and the standard reference is equal to 0.51.

Fig. 1 shows the data gathered from the medical examiners who said they had participated in >25 medico-legal evaluations to asylum seekers (a sub-sample of 16 physicians, 53% of the total sample).

The Fleiss' Kappa coefficient for data gathered from professionals who said they had participated in at least 25 medico-legal evaluations to asylum seekers is equal to 0.32 (fair agreement). The agreement between the degrees of consistency assigned by the practitioners and the standard reference is equal to 0.61.

Fig. 2 shows the data gathered from the medical examiners who said they had participated in more than 50 medico-legal evaluations to asylum seekers (a sub-sample of 9 doctors, 30% of the total sample). The Fleiss' Kappa coefficient in this case is equal to 0.30 (fair agreement).

The agreement between the degrees of consistency assigned by the aforementioned practitioners and the reference standard is equal to 0.69.

Fig. 3 shows the data gathered from the medical examiners who said they had more than 5 years of experience (a sub-sample of 10 doctors, 33% of the total sample).

The Fleiss' Kappa coefficient in their case is equal to 0.37 (fair agreement). The agreement between consistency judgments assigned by the aforementioned professionals and the standard reference is equal to 0.70.

Fig. 4 shows the data gathered from the medical examiners who said they had collected more than 5 years of experience and attended a number of medico-legal evaluation to asylum seekers > 50 (a sub-sample of 6 doctors, 20% of the total sample).

The Fleiss' Kappa coefficient is equivalent to 0.72 (substantial agreement).

The agreement between the degrees of consistency assigned by the aforementioned professionals and the standard reference, is equivalent to 0.83. Table 2 summarizes the statistical outcomes.

4. Discussion

The Istanbul Protocol is an instrument for the investigation and documentation of torture or other inhuman, degrading, and cruel treatment. It has been designed for professional use by politicians, jurists, physicians, psychologists, anthropologists, and, more generally, anyone who deals with victims of torture [12]. The section dedicated to the medicolegal evaluation is divided into physical and psychological

examinations of torture signs. Although the section may seem exhaustive and concise, its use may be complex in ordinary practice [11,15,41–43]. Most of the cases of alleged torture have multiple nuances and various interpretations about the causes of the injuries and the authenticity of the story narrated by the victim.

In the clinical forensic medicine field, and especially regarding the assessment of physical lesions as the ones reported by torture victims, the literature is scarce. The underlying issue is the lack of a “reference manual” or an “illustrative atlas” of injuries. In clinical forensic practice, medical reasoning works backward from the examination of the injury features to determine the most likely cause. For this reason, in daily practice, during the decision-making process, the clinical forensic practitioner refers to previous cases in their possession, texts, and, primarily, their own experience. Specifically, the clinical forensic practitioner’s experience has the greatest influence on the degree of consistency. Therefore, it is understandable that the medicolegal assessment of torture is highly operator dependent. The appearance of physical signs is heterogeneous in terms of patient-related factors: shape, size, color, margins, surveying, and texture to the touch are all features that must be investigated and described in detail during the physical examination because only a few of them may be pathognomonic for specific injuring agents. Although the consistency assessment is based on the patient’s reported history, and the causes and injuries that are considered are those cited by the patient himself, in some cases, the information provided is not sufficient. In this scenario, the interpreter or cultural mediator is a key figure in the evaluation team [44–46]. The victim’s account is often confusing, non-linear, has temporal voids, and is marked by the psychological scars that the torture caused; hence, the interpreter plays a fundamental role in helping the doctor reconstruct the sequence of events that led to the injuries. In general, these patient-related factors can be considered poorly systematic and interpretable according to predefined standards.

After recognizing that the factors concerning the victim of torture are different in nature, attention must be focused on the characteristics concerning the physicians. Therefore, in the present research, the key point of the assessment is the analysis of the variation of the degrees of consistency based on a combination of experience and the number of assessments performed in a group of Italian forensic practitioners who deals with asylum seekers who were victims of violence.

Regarding the experience of the participants, most professionals in our study are new to this area; just over one-third of raters had less than a year of experience. It is the evaluation of the influencing factor “experience” which has led to the structuring of this essay: even if the

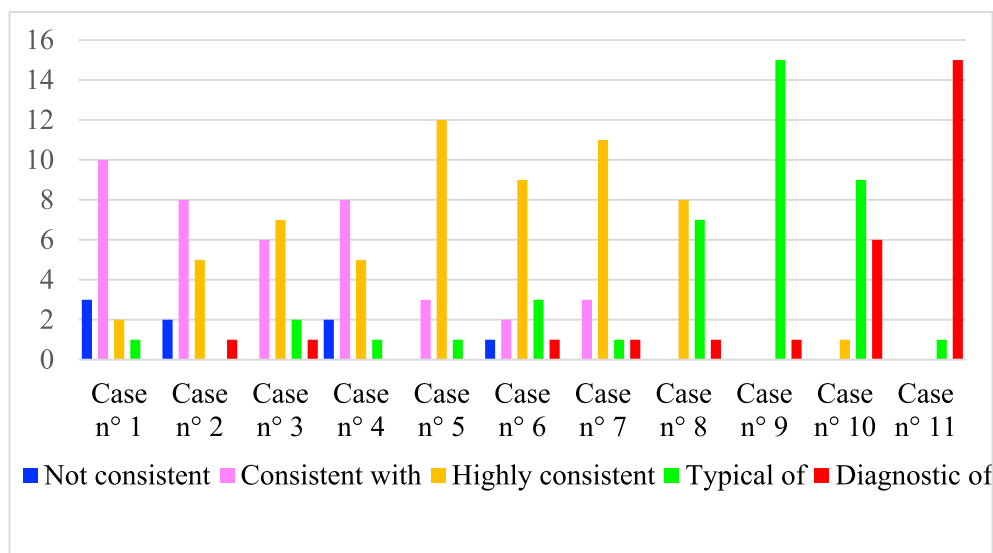


Fig. 1. Number of medico-legal evaluations the medical examiners attended to > 25 and their graphic distribution.

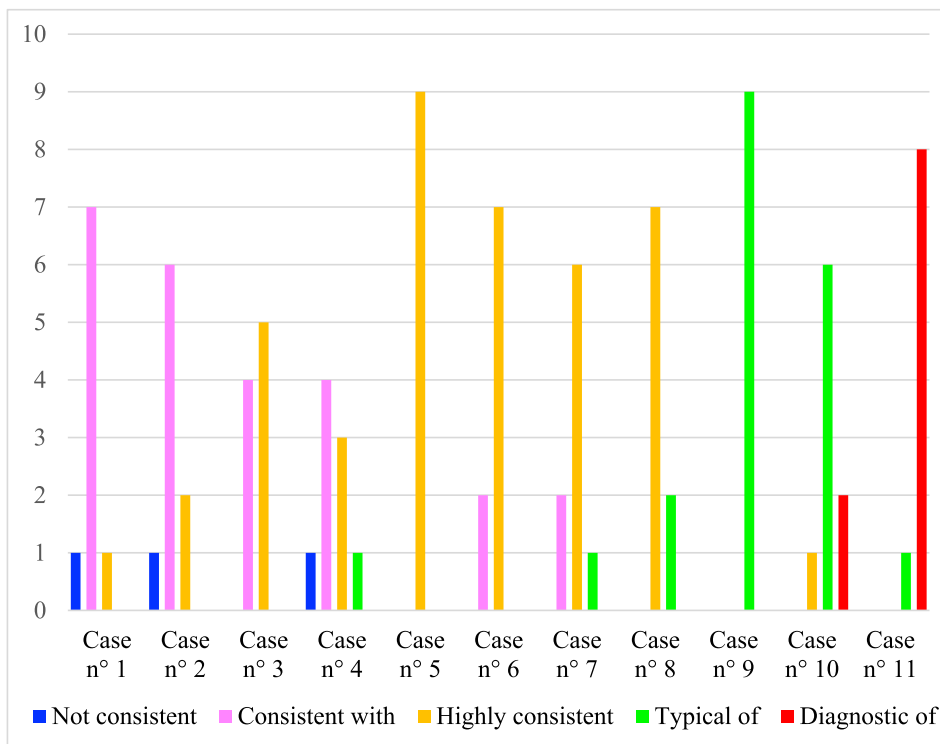


Fig. 2. Number of medico-legal evaluations the medical examiners have attended to > 50 and their graphic distribution.

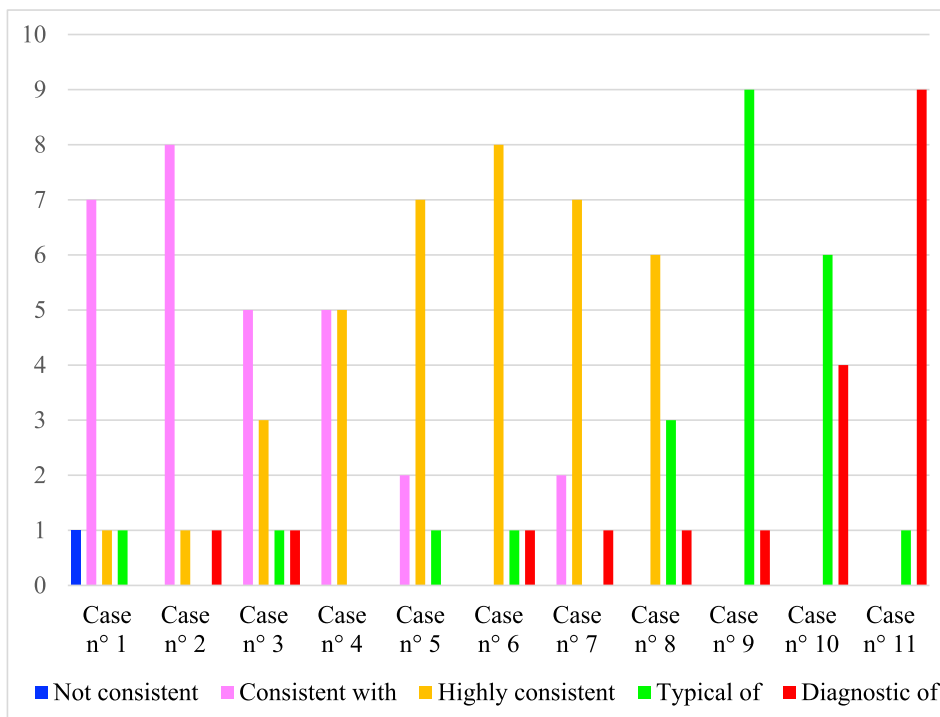


Fig. 3. Years of experience > 5 and their graphic distribution.

majority does not have the experience of those who have been working in this field for more than ten years, the doubts and questions previously set out arose immediately. Answering the question is more relevant than ever given the growing importance of the topic and the relative lack of experience of professionals approaching this activity: how and in what terms does the experience of the clinical forensic practitioner influence the choice of the final degree of consistency? How do the degrees of

consistency assigned by medical examiners with five or ten years of experience change in relation to the opinions expressed by new physicians? To help and guide new professional figures and to protect asylum seekers or victims of torture, clear and comprehensive guidelines should be compiled. So how can we express the experience accumulated if not in terms of the number of cases visited? Knowing how many patients have been visited or how many medicolegal visits to asylum seekers the

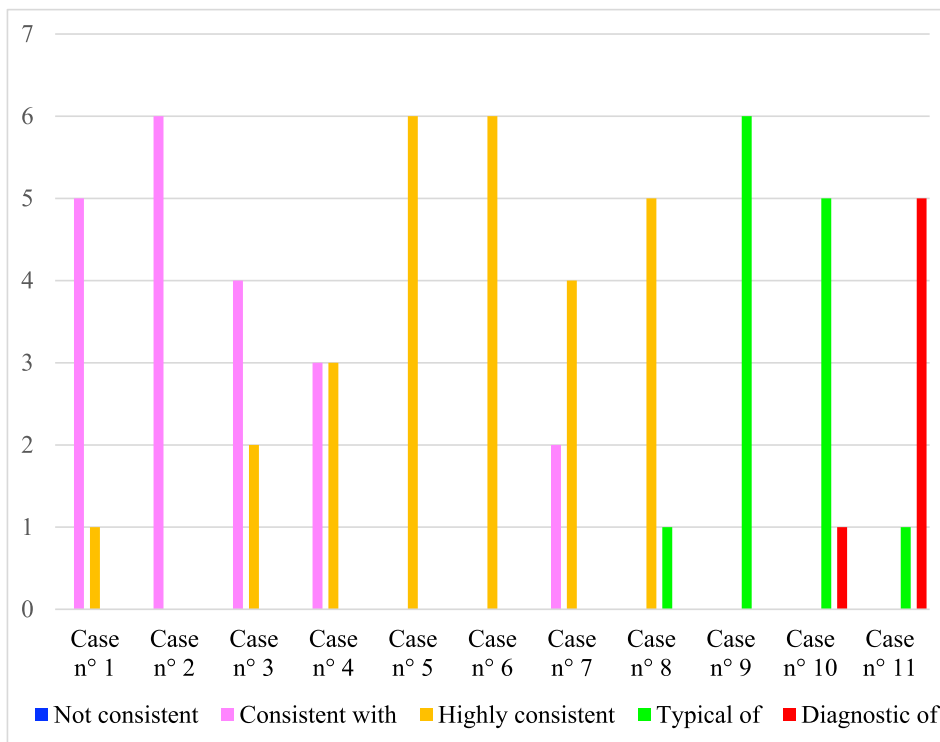


Fig. 4. Years of experience > 5 + number of medico-legal evaluations the medical examiners have attended to > 50 and their graphic distribution.

Table 2
Fleiss' kappa and agreement with standard reference for all the considered subgroups.

	Overall	n° casi > 25	n° casi > 50	n° anni > 5	n° casi > 50 + n° anni > 5
Fleiss' Kappa	0,17	0,32	0,31	0,37	0,72
Standard reference	0,51	0,61	0,69	0,70	0,83

participants have taken part in, even just as a spectator, gives us an idea of the experience that participants have towards the search for physical signs in victims of torture. According to the data emerging from the present research, just over half of the raters (precisely 53%) stated that they had witnessed at least twenty-five cases as an examiner or spectator. Also, none of the participants stated that they had participated in any specific training for the assessment of torture victims.

Due to the great heterogeneity of the answers received, the consistency of the assessments expressed was analyzed according to the experience of the professionals and the number of asylum seekers examined.

For each of the sub-samples listed, the evaluation of inter-rater reliability (Fleiss' Kappa) and the agreement with the standard reference have been carried out and calculated as reported in Table 2. A Fleiss' Kappa value greater than or equal to 0.75 is usually considered a good degree of agreement, because complete agreement between judgments is expressed with Fleiss' Kappa = 1. A complete disagreement amongst the collected data would, on the other hand, be expressed with Fleiss' Kappa less than or equal to zero. As part of this argument, the Fleiss' Kappa score overall is far from 1, reflecting the heterogeneity of the answers. Fleiss' Kappa overall covering all thirty answers emerged at 0.17, or slight agreement. The subsequent stratification of the results makes it possible to transform the heterogeneity of the data that emerged into a statistical measure and thus have an objective view of the concordance between experts. Clearly, what emerged is that there is a trend of improvement in terms of uniformity/homogeneity between the

judgments expressed and a reduced dispersion of the latter along with the column diagram as we evaluate the answers that emerged from the different subpopulations (Table 2). Assuming a standard reference, the trend of improvement in terms of the uniformity of the data that emerged increases statistically significantly, particularly in the last case. The level of agreement between the opinions expressed by the six leading experts in the population under consideration and the judgments expressed by standard reference is extremely high. The picture is therefore consistent with what was already observed from the analysis carried out by the calculation of the Fleiss' Kappa: in fact, the highest experts among the survey participants were those who possessed the combination of experience > 5 years + number of cases visited > 50; in other words, they were those who had accomplished a lasting and varied path in the field of clinical forensics and consequently could represent an effective reference in terms of experience.

It was clear that a combination of experience gained over many years and >50 cases examined best allowed for degree of consistency uniformity and reproducibility. Since all the professionals who took part in the survey were aware of the information contained in the Istanbul Protocol, the theory contained therein is not sufficient to provide an objective, uniform, and reproducible key to a case of torture, and the spreading of this instrument is only the first step that needs to be taken to make it a useful document in medical and forensic practice.

The medico-legal evaluation and its outcome seem to influence the judgment of the Territorial Commission, which has the power to decide whether to grant political asylum to the applicant. So, the medico-legal assessment performed thoroughly following the indications of the Protocol is, perhaps, the most powerful instrument capable of determining the concordance between what is narrated by the victim and the reality of the events. Ergo, the dissemination and knowledge of the Istanbul Protocol among health professionals, in addition to their adequate education on the issue, are the elements that allow for the formation of a class of experts able to conduct a standardized and effective medico-legal evaluation of torture practices [[11,14,47,48].

As discussed, what emerged and is clearly proven from the present research is that a mere application of the Istanbul Protocol is not enough

to express an appropriate evaluation, although the protocol tends to yield similar results among expert observers. Also, as recently stated by Jühling and colleagues [47], although the Istanbul Protocol grading system is recommendable especially for forensically unexperienced physicians, being “easy-to-handle”, under difficult circumstances the evaluation should be performed by an experienced forensic physician who should rely on their own experience. In fact, in the Italian context such expertise is not usually taught in undergraduate medical school or in postgraduate medicolegal specialization. When the practitioner gains experience, both in terms of years and number of cases, the evaluations gain significant value. The combination of experience over the years and the number of cases examined statistically proved to be the factor that best allowed for achieving uniformity and reproducibility in consistency judgments. As in other scientific fields, training (and consequent professional experience) represents the backbone for a proper medico-legal assessment in cases of alleged torture. In addition, greater professional dissemination of the Istanbul Protocol and a specific extension of the medico-legal section could ensure better feedback in forensic clinical activity and result in the timely and appropriate taking of charge of these vulnerable subjects. However, the Protocol, particularly in its novel 2022 version [49], is a fundamental instrument and a cornerstone for the evaluation of victims of torture; in the future, it could reach its maximum ambition if implemented.

5. Limitations

This study suffers some limitations. Mainly, the present research relates only to the Italian scenario, not allowing us to generalize our findings to other countries. In many contexts on the national territory, not to say practically all, there is no idea of what the Istanbul Protocol is or what its applications are in such a sensitive area as that concerning asylum seekers. Also, there are no professionals who deal with it in a specific way: the study of the Istanbul Protocol is included in the teaching programme of very few schools specializing in forensic medicine, and in this context, it remains, almost exclusively bound to the humanitarian world; since there is no separate training course, most specialists devote themselves to other areas of work, and this justifies the lack of experience. Also, all participants were specialists in forensic medicine. The assessment of the physical consequences of violence and torture requires a specific set of competences (knowledge and skills) that can only be acquired through experience, such as the case of the expert professionals considered in this study.

Another limitation is the limited number of cases analyzed. The purpose of the present research was to study the differences among observers when allocating judgement according to the Istanbul Protocol. The number can be considered sufficient for the analysis of the interrater reliability, whereas, in order to test the accuracy of the physical assessment of torture among practitioners, a larger sample would have been more adequate. Further statistical analysis was performed to determine the statistical significance of the results, but the small sample size, as expected, precludes a strong significance.

Finally, possible biases on the part of the participants may have affected the outcomes of the research. Evaluating victims from physical violence or torture requires an evidence-based approach that considers as many factors as possible, avoiding biases. Several sources of bias have been identified as impacting observations by forensic experts [50]. Since they may unintentionally emerge due to several factors (related to the case, the examiner, the human nature, etc.), and their consequences could be extremely relevant to the decision-making process [51], there is a need to examine if such cognitive bias impacts the experts' perception of the narratives and leads them to the final decision. Determining the impact of bias would require a more granular approach: a more detailed survey would be needed to assess more specific characteristics about the respondents, as well as a higher sample of respondents from different nationalities, training backgrounds, etc.

6. Conclusions

What can be concluded from the analysis of the data collected through the survey, expressed as a degree of consistency as accurate as possible, is that mere application of the Istanbul Protocol is not enough. The Fleiss' Kappa coefficient acquires significant values when turning attention to the sub-samples composed of participants who have obtained at least 5 years of experience and a number of cases visited > 50. In fact, the proper application of the Istanbul Protocol is only the “tip of the iceberg”, as the study showed that the judgements are uniform among users with similar experiences, albeit with the limitations outlined above. In consideration of the extremely delicate scenarios in which the Istanbul Protocol is used, the time is ripe to consider that the introduction of appropriately trained health professionals “expert in migrations and torture” could lower the risks of misinterpretation and make the assessment as reproducible as possible.

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Ethics approval

The involved subjects had given specific informed consent for the use of their data for research purposes.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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