Medical ethical standards in dermatology: an analytical study of knowledge, attitudes and practices

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Abstract

Background Dermatology practice has not been ethically justified at all times.

Objective The objective of the study was to find out dermatologists’ knowledge about medical ethics, their attitudes towards regulatory measures and their practices, and to study the different factors influencing the knowledge, the attitude and the practices of dermatologists.

Methods This is a cross-sectional comparative study conducted among 214 dermatologists, from five Academic Universities and from participants in two conferences. A 54 items structured anonymous questionnaire was designed to describe the demographical characteristics of the study group as well as their knowledge, attitude and practices regarding the medical ethics standards in clinical and research settings. Five scoring indices were estimated regarding knowledge, attitude and practice. Inferential statistics were used to test differences between groups as indicated. The Student’s t-test and analysis of variance were carried out for quantitative variables. The chi-squared test was conducted for qualitative variables. The results were considered statistically significant at a P > 0.05.

Results Analysis of the possible factors having impact on the overall scores revealed that the highest knowledge scores were among dermatologists who practice in an academic setting plus an additional place; however, this difference was statistically non-significant (P = 0.060). Female dermatologists showed a higher attitude score compared to males (P = 0.028). The highest significant attitude score (P = 0.019) regarding clinical practice was recorded among those practicing cosmetic dermatology. The different studied groups of dermatologists revealed a significant impact on the attitude score (P = 0.049), and the evidence-practice score (P < 0.001).

Conclusion Ethical practices will improve the quality and integrity of dermatology research.

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Conflicts of interest
None declared.

Financial disclosure
None declared.

Introduction
Ethics are the summation of morals, values and codified laws of professional behaviour.

Dermatology has largely grown and encompasses subspecialties that necessitate performing procedures to patients. Cosmetic dermatology has greatly found its appeal due to the great demand on aesthetic procedures.

Research in the field of dermatology and dermatology practice had been noted to lack strict regulatory terms.

The fact that the ‘industry’ interferes greatly in practice trends and sometimes directs the practitioner’s habits towards their products, necessitates control of the complex relationship, in order to finally and solely focus on patient welfare and minimize secondary benefits.

The aim of this study was to find out dermatologists’ knowledge about medical ethics, their attitudes towards various regulatory measures and their practices whether in clinical settings or in research. Other objectives included whether patients gave informed consent ahead of the various procedures, prescription of serious medications, prior to inclusion in clinical trials and if they had been given sufficient information on the complications of various procedures, as well as, studying the different factors influencing the knowledge, the attitude and the practices of dermatologists.
Materials and methods
This cross-sectional comparative study conducted among a convenient sample of 214 dermatologists, from five Academic Dermatology Departments and from participants in two dermatology conference. The non-response rate among the various study groups did not exceed 5%.

A 54 items structured anonymous questionnaire was designed to describe the demographical characteristics of the study group as well as their knowledge, attitude and practices regarding the medical ethics standards in clinical and research settings (Appendix S1). A special section was designed in the questionnaire to highlight the pharmaceutical industry possible impact on the dermatologists’ practices.

Data management and statistical analysis
Data were coded and entered on the statistical package SPSS version 16.0 (SPSS, Inc., Chicago, IL, USA). Data were checked, revised and cleaned before statistical analysis. Five scoring indices were estimated regarding knowledge (one index), attitude (one index) and various practices in clinical and research settings (three indices). The knowledge and practice index score ranged from a minimum of ‘0’ to a maximum of ‘3’. As for the three practices index scores they varied as follows: the evidence-based practice index score ranged from a minimum of ‘1’ to a maximum of ‘7’, the clinical-practice index score ranged from a minimum of ‘0’ to a maximum of ‘26’ and the research-practice index score ranged from a minimum of ‘0’ to a maximum of ‘6’.

Descriptive statistics were carried out to summarize and present the study variables as indicated. The percentage as well as the mean and standard deviation were used as summary parameters. Inferential statistics were used to test differences between groups as indicated. The Student’s t-test and analysis of variance were carried out for quantitative variables. The chi-squared test was conducted for qualitative variables. The results were considered statistically significant at a P-value >0.05.

Results
This study included 214 practicing dermatologists from which 87% (n = 187) accepted to answer the questionnaire. Female to male ratio was 3:1. Their ages were all above 21 with 46% (n = 83) in the age group 21–30 years. The duration of their work experience ranged from 0 to >16 years with 51% (n = 94) in the range 0–5 years. Their educational background and qualification revealed that 32% (n = 58) were Bachelor of Medicine, Bachelor of Surgery (M.B.B.Ch.), 5% (n = 9) Diploma, 33% (n = 60) Master of Science (M.Sc.), and 30% (n = 54) were Medical doctorate (M.D.) (or equivalent) certified. Dermatological practice settings were Academic (University or Research centre) in 11% (n = 21), Ministry of Health (MOH) and General hospital/primary health care service in 19% (n = 53), private practice in 9% (n = 17), and 51% (n = 113) practiced dermatology in various settings. Regarding educational training on medical ethics, the main method was in the form of lecture 61% (n = 34) at undergraduate and 34% (n = 18) at postgraduate levels.

Assessment of knowledge, attitude and practices: individual items and collective scores
Among the studied groups 73% (n = 128) recognized the role of ethical committees in human research and clinical trials and 84% (n = 144) expressed their awareness of the need to get approval of a research protocol from their respective institutional ethical committees.

The knowledge score ranged from 0 to 3 with more than 60% (n = 103) scoring 3.

Among the studied dermatologists 2% (n = 10) of these dermatologists performed the necessary tests on their possible side effects including malignancy, and 77% (n = 10) informed their patients that treatment was part of a clinical trial and 55% (n = 31) had their patients sign consent forms before enrolment in the trial.

Among the studied dermatologists 2% (n = 4) participated in stem cell research of which three of the four was on humans, and all had been approved by institutional ethical committee, and all participants were informed of the experimental nature of the research and signed consent before their enrolment.

Among the study group 33% (n = 57) participated in a clinical trial (phase 3 or 4) on human subjects from which only 72% (n = 41) informed their patients that treatment was part of a clinical trial and 55% (n = 31) had their patients sign consent forms before enrolment in the trial.

Among the studied dermatologists 2% (n = 4) participated in stem cell research of which three of the four was on humans, and all had been approved by institutional ethical committee, and all participants were informed of the experimental nature of the research and signed consent before their enrolment.

Among the study group 12% (n = 15) prescribed biologics to their patients from which 94% (n = 14) educated their patients on their possible side effects including malignancy, and 77% (n = 10) told them that biologics are in the early years and with as yet unknown possible future adverse effects, while 91% (n = 10) of these dermatologists performed the necessary tests prior to administration of biologics.

This study showed that 59% (n = 72) prescribed medications for an (off label) use to their patients with maximum number 61% (n = 11) prescribed them only sometimes.
Analysis of the practice score among the study group who use evidence-based tools in their practice (evidence-practice score) \( (n = 213) \) revealed a range from 1 to 7 with more than 40% \( (n = 91) \) scoring 4.

The practice score among dermatologists who practice research based on clinical trials or biologics (research-practice score) \( (n = 56) \) ranged from 0 to 2 with more than 50% \( (n = 30) \) scored 2.

The practice score among dermatologists who practice research based on stem cells (research-practice score) \( (n = 4) \) ranged from 4 to 6 with 75% \( (n = 3) \) scored 6.

The practice score during their clinical practice with the patients (clinical-practice score) \( (n = 214) \) ranged from 0 to 26 with about 20% \( (n = 42) \) scored 14.

Among the studied groups, 57% \( (n = 70) \) had been sponsored by a pharmaceutical company to attend a scientific conference with maximum number 47% \( (n = 32) \) sponsored just sometimes; 8% \( (n = 10) \) had been speaker while 8% \( (n = 10) \) had been consulted for a pharmaceutical/cosmeceutical company, and 4% \( (n = 4) \) had been rewarded for being speaker or consultant. Lunch or dinner invitations by a pharmaceutical/cosmeceutical company representatives were accepted by 69% \( (n = 84) \), with 50% of those \( (n = 42) \) responding only sometimes.

**Factors influencing knowledge, attitude and practices**

Analysis of the possible factors having impact on the overall scores for the knowledge, attitude and practices revealed the following:

The highest two knowledge scores were among dermatologists who practice in an academic setting plus an additional place whether MOH or General hospital/Primary health care service or private practice with mean of 1.7 ± 0.6 and 1.6 ± 0.6 respectively; however, this difference was statistically non significant \( (P = 0.060) \).

The influence of sex, age, time since practicing as dermatologist, qualification, type of clinical practice, dermatologist/industry relationship, different dermatologists’ groups and prior education on medical ethics at both undergraduate and postgraduate levels revealed no significant differences \( (P = 0.131, 0.515, 0.641, 0.101, 0.839, 0.867, 0.293, 0.865, 0.245 \) respectively). The sex showed a significant impact \( (P = 0.028) \) on the attitude score where female dermatologists \( (n = 120) \) showed a relatively higher score of 2.9 ± 0.5 compared to males \( (n = 42) \) score of 2.6 ± 0.7 (Table 1). The highest significant attitude score \( (P = 0.019) \) regarding clinical practice was recorded among those practicing cosmetic and laser/surgical dermatology with a mean of 3.5 ± 1.2 (Table 1). The different studied groups of dermatologists revealed a significant impact \( (P = 0.049) \) on the attitude score where dermatologists from an academic settings showed a higher significant \( (P = 0.034) \) score of 3.3 ± 0.6 when compared to Egyptian dermatology conference participants with attitude score of 2.7 ± 0.6 (Table 1).

Table 1 The attitude score (mean ± SD) in between different influencing factors

<table>
<thead>
<tr>
<th>Influencing factor</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>42</td>
<td>2.67</td>
<td>0.69</td>
<td>0.028*</td>
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<tr>
<td>Female</td>
<td>120</td>
<td>2.88</td>
<td>4.88</td>
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</tr>
<tr>
<td>Clinical practice</td>
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<td></td>
</tr>
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<td>Clinical dermatology</td>
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<td>2.82</td>
<td>0.45</td>
<td>0.019*</td>
</tr>
<tr>
<td>Clinical and cosmetic dermatology</td>
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<td>2.76</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Cosmetic and laser/surgical dermatology</td>
<td>6</td>
<td>3.5</td>
<td>1.22</td>
<td></td>
</tr>
<tr>
<td>Clinical and laser/surgical dermatology</td>
<td>25</td>
<td>2.84</td>
<td>0.55</td>
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</tr>
<tr>
<td>Different studied groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic setting 1 (Cairo University)</td>
<td>64</td>
<td>2.96</td>
<td>0.35</td>
<td>0.046*</td>
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<tr>
<td>Academic setting 2 (Markaz El Bohoth)</td>
<td>13</td>
<td>2.69</td>
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<tr>
<td>Academic setting 3 (Aim Shams University)</td>
<td>11</td>
<td>3.27</td>
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<tr>
<td>Egyptian dermatology conference</td>
<td>43</td>
<td>2.79</td>
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<tr>
<td>Foreign dermatologists</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International dermatology conference</td>
<td>28</td>
<td>2.67</td>
<td>0.61</td>
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</tbody>
</table>

*P value <0.05 is significant.

Age, duration of work experience as a dermatologist, qualification, clinical setting and dermatologist/industry relationship showed no significant difference \( (P = 0.994, 0.495, 0.409, 0.176, 0.498 \) respectively).

The highest clinical-practice score was among who practice in two settings; an academic one and an MOH or General hospital/Primary health care service with a mean of 14.7 ± 5.3; however, this difference was statistically non significant \( (P = 0.075) \).

The different studied groups of dermatologists revealed a nearly significant \( (P = 0.059) \) highest clinical-practice score among foreign dermatologists with mean of 14.9 ± 7.5.

Sex, age, time for being dermatologists, qualification, clinical practice and dermatologist/industry relationship showed no significant difference \( (P = 0.095, 0.530, 0.155, 0.104, 0.153, 0.213 \) respectively).

Factors such as sex, age, duration of work experience as a dermatologist, qualification, clinical setting, clinical practice, dermatologist/Industry relationship and different dermatologists’ groups studied did not appear to significantly influence research practice \( (P = 0.827, 0.178, 0.307, 0.397, 0.275, 0.188, 0.141, 0.332 \) respectively).

The clinical setting revealed a significant impact \( (P = 0.017) \) on the evidence-practice score, where the highest score was...
Table 2 The evidence-practice score (mean ± SD) in between influencing factors

<table>
<thead>
<tr>
<th>Influencing factor</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical settings</td>
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<tr>
<td>Academic University</td>
<td>20</td>
<td>5.2</td>
<td>1.36</td>
<td>0.017*</td>
</tr>
<tr>
<td>Public/Government</td>
<td>35</td>
<td>4.51</td>
<td>1.52</td>
<td></td>
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<tr>
<td>Private practice</td>
<td>17</td>
<td>5.71</td>
<td>1.21</td>
<td></td>
</tr>
<tr>
<td>Academic University and public/government</td>
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<td>5.28</td>
<td>1.48</td>
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</tr>
<tr>
<td>Public/Government and private practice</td>
<td>22</td>
<td>4.77</td>
<td>1.63</td>
<td></td>
</tr>
<tr>
<td>Academic University and private practice</td>
<td>31</td>
<td>4.39</td>
<td>1.38</td>
<td></td>
</tr>
<tr>
<td>All settings</td>
<td>21</td>
<td>4.9</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>Studied groups</td>
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<td></td>
</tr>
<tr>
<td>Academic setting 1 (Cairo University)</td>
<td>72</td>
<td>4.51</td>
<td>1.43</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Academic setting 2 (Markaz El Bohoth)</td>
<td>13</td>
<td>4.61</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>Academic setting 3 (Aim Shams University)</td>
<td>13</td>
<td>4.92</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Egyptian dermatology conference</td>
<td>70</td>
<td>4.53</td>
<td>1.38</td>
<td></td>
</tr>
<tr>
<td>Foreign dermatologists</td>
<td>8</td>
<td>6</td>
<td>1.09</td>
<td></td>
</tr>
<tr>
<td>International dermatology conference</td>
<td>37</td>
<td>5.59</td>
<td>1.14</td>
<td></td>
</tr>
</tbody>
</table>

*P value <0.05 is significant.

Among dermatologists in private practice with a mean of 5.7 ± 1.2 (Table 2).

The different studied groups of dermatologists showed a significant impact (P < 0.001) on the evidence-practice score, where the highest score was among foreign dermatologists with a mean 6 ± 1.1 followed by Egyptian dermatological conference participants with mean of 5.6 ± 1.1 (Table 2).

Sex, age, duration of work experience as a dermatologist, qualification, clinical practice and dermatologist/Industry relationship showed no significant difference (P = 0.117, 0.250, 0.483, 0.441, 0.345, 0.419 respectively).

Discussion

This study assessed dermatologists’ knowledge, attitude and practice of medical ethics. The majority of dermatologists recognized the role of ethical committees in human research.

Medical ethics was established by Hippocrates and Maimonides, as well as by all religions teachings. In the mid-19th century, the term ‘medical ethics’ was coined by Thomas Percival. Medical schools, hospitals and specialty societies have developed ethics committees whose role is to review human experiment protocols and clinical-practice conflicts.

There is a difference between medical ethics and medical legal issues. The values of medical ethics include the patient’s right to refuse or choose treatment (autonomy), the patient’s best interests (beneficence), avoidance of patient’s harm (non-maleficence), fairness in how healthcare is distributed (justice), dignity for the patient and practitioner and the use of informed consent (truthfulness). Unlike legal issues, there are no right or wrong answer.6

Nearly all the studied dermatologists believed that dermatological practice is in need of evidence-based treatment and that it was important to have an ethical research review committee approval.

The Institutional Review Board (IRB) is supposed to ensure that investigations are properly designed and that the study environment and procedures will be safe for researcher and subject. Abuse occurs when the IRB does not do its job or when there is no institutional or national oversight at all.1

Most of dermatologists were keen to hide patients’ identities. Photography is a major asset to the documentation of lesions and eruptions, as well as for cosmetic results. Capturing images is replete with potential ethical issues.7

The routine use of informed consent among patients was exercised among few dermatologists. Although the responsibilities of the patient are routinely and clearly explained in the consent form, many of the issues involved in patient recruitment, management, and evaluation may not be so well defined. It is the responsibility of the investigator to implement human subjects’ protection.8

Participants in clinical trial on human subjects informed their patients that treatment was part of a clinical trial. Prestige, career advancement and politics can create conflicts of interest for investigators especially in academic settings when clinical trials are conducted by particular companies. The necessity of ethical conduct is so obvious in clinical research.8 An investigator’s reputation is determined by the calibre and number of his or her publications. Researchers may work a lifetime striving for publication in the top journals neglecting the patient’s human rights.9 Consent forms and conflict of interest disclosures are the current protection against any obvious conflict.

One of the major advances in the field in the last decade has been the approval of biological therapies; the use of these medications is laden with disadvantages including expense, time required to obtain insurance approval, and potential adverse effects.7

Sometimes dermatologists prescribed medications for an (off label) use. Taking a step beyond marketing off-label medication use, the migration of a research instrument from clinical trials into common usage has been explored. A variety of treatments have entered common clinical use even if conclusive proof of their safety and efficacy was lacking; such as griseofulvin in lichen planus.1

Few dermatologists had consulted for a pharmaceutical/cosmeceutical company. The issue of being an industry consultant at the same time as being a physician–educator should be discussed. Physician should be compensated fairly for their work.
and time spent on an event. The ethical problem occurs when compensation influences opinion and behaviour. The Pharmaceutical Research and Manufacturer’s Association (PhRMA) developed voluntary guidelines based on the ethical standards proposed by the American Medical Association. Companies, both those that subscribed to the 2002 PhRMA ethics code and those that did not, continued activities considered unethical by many organizations and professional societies.¹

The influence of different factors on the knowledge, the attitudes and the practices of dermatologists have been studied and revealed that the highest knowledge, attitude and clinical-practice scores were among dermatologists who practice their work in an academic setting. Academic clinicians usually have the desire to provide even the most difficult patients with a clear-cut diagnosis and treatment plan and to train the next generation of brilliant physicians and constantly seek to improve the reputation of their institution.⁹

Female dermatologists showed a relatively higher attitude score and the highest attitude score regarding clinical practice was recorded among those practicing cosmetic and laser/surgical dermatology. With an increasing number of physicians performing cosmetic procedures, the potential for problems and their legal consequences continues to increase. The duty of a physician performing cosmetic dermatology is to perform the procedure in accordance with the standards of care.¹⁰

The highest evidence-practice score was in private practice. This could be explained by the fear of dermatologists in their private place to work without evidence; everyone is keen about their name in the field and cannot take the full responsibility to treat patients as in academic universities.

In conclusion, informing patients about risks and benefits of treatment will have to include any ‘significant, unavoidable or commonly occurring side-effect’. Teaching ethics to residents and undergraduates must be done. Efforts towards encouraging ethical practices will serve to improve the research, and enhance downstream outcomes in the therapeutic and clinical sphere of dermatology. The use of journal publications, presentations and training sessions can be used to minimize the risk of ethical conflict.

References

Supporting information
Additional Supporting Information may be found in the online version of this article:

Appendix S1. Questionnaire for dermatologists.