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Dermatology nurse prescribing in China: a Delphi method

Original Article

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Abstract: **Objectives:** To identify the dermatological system drugs that may be prescribed by Chinese dermatological nurses through expert consensus.

Methods: A 2-round study, consisting of 32 medical and nursing experts, was conducted using the Delphi method from September 2019 to June 2020. Microsoft Excel 2019 and IBM SPSS Ver. 22 were used to analyze the results of the consultations.

Results: A total of 63 drugs across 13 categories were identified as relevant to Chinese nurses working in dermatological departments. Among these drugs, 1 drug was generally prescribed independently, 17 drugs tended to be prescribed collaboratively, and 45 were prescribed either independently or in collaboration with others.

Conclusions: This expert consensus determines the prescription drugs that may be prescribed by dermatology nurses in China, which can be used as the key content of prescription drug training for dermatology nurses in future. The results of the study could provide a basis for the implementation of nurses' prescription rights in China in future and provide a reference for the formulation of relevant legislation on nurses' prescription rights.

Keywords: *dermatological drugs • dermatology department • modified Delphi • nurse prescribing • nurses*

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1. Introduction

In recent years, great changes have taken place in the role of nursing in drug management, and more and more countries have begun to give nurses prescription rights.[1–3] In the 1960s, to alleviate the shortage of medical resources, the United States began to devolve the power of prescribing drugs to nurses, thus opening a precedent for nurses to prescribe. In 2017, there were about 234,000 licensed Nurse Practitioner (NPs) in the United States, of which 86.6% had obtained primary care certification and 95.8% had prescribed prescription drugs.[2,4] Subsequently, South Africa, due to a shortage of doctors, made it difficult to transfer health care services from hospitals to primary health service centers closer to rural areas, and nurses were granted prescription rights in 1997.[1,5] To meet the treatment needs of patients in the community, the first pilot prescription right for nurses was set up in 1994 in the United Kingdom. By 2002, nearly 23,000 nurses qualified as regional nurses, or health visitors had been trained to prescribe drugs from limited prescriptions.[1] In 2001, the United Kingdom began to

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set up independent prescriptions to further expand the scope and environment for nurses to prescribe drugs, which covers 4 broad areas of practice: mild illness, minor injuries, health promotion, and palliative care. A training program for higher education institutions was launched in 2002 to support the expansion of this prescription for independent nurses. A supplementary prescription was introduced in the same year, and with the consent of the doctor, the nurse can prescribe any prescription in the plan. Almost all UK national prescription tables were opened to independent and supplementary nurse prescribers in 2006, and British nurses now have the broadest range of prescription rights.[6]

The United States, UK, Australia, and other countries have studied the effect of nurses' prescription rights. These studies select the effects of nurses and doctors prescribing in primary health care, communities, and hospitals on patient outcomes, medical costs, and patient satisfaction. Most studies show that patients are more willing to accept the continuous and holistic form of medical services provided by nurses' prescriptions. Nurses also believe that cost can be saved by improving patients' access to drugs and reducing patients' waiting time. In addition, nurses' prescriptions can reduce the number of unplanned nursing, shorten the length of stay, and reduce the rate of readmission.[7–11]

In Chinese mainland, nurses have not been granted prescription rights, but Article 17 of the nurses regulations states that to save the lives of critically ill patients in emergency situations, nurses should first carry out the necessary emergency care.[12] Ding et al.[13] found that 69.3% of nurses believed that the lack of prescription power was the main difficulty and obstacle encountered in outpatient practice. According to Tian Equal,[14] 74.1% of nurses think it is necessary to give nurses the right to prescribe, and 58.0% of nurses say they want to have the right to write prescriptions, indicating that Chinese nurses also have a certain demand for nurses' prescription rights. The results suggest that clinical nurses agree that properly opening up nurses' prescription rights on the premise of protecting nurses' rights and interests can increase work efficiency, enhance nurses' pride and enthusiasm for the profession, strengthen the development of clinical nursing research, and gain respect from the society and patients at the same time, which are also suggested by Creedon et al.[15]

According to the 2019 China Health Statistics Yearbook[16] in 2018, there were about 4.09 million registered nurses in China, 16% of whom had bachelor's degree or above. The level of knowledge, professional skills, and post competence of nurses have been greatly improved, and nursing work has also changed from life nursing to professional skills. Specialist nursing clinic (NLC), as an advanced nursing practice model,[17] is an important embodiment of the improvement of nurses' professional ability. According to the Statistical Yearbook,[16] there are about 3.01 million medical practitioners in China, and the number of doctors/1000 population is only 2.16. Due to the long training cycle of doctors, there is a large gap among Chinese grassroots doctors, which cannot meet the huge therapeutic and preventive needs. In recent years, the proportion of the aged in China has increased, and the disease spectrum has changed. By the end of 2018, the number of people aged ≥60 years in China has reached 249 million, accounting for 17.9% of the national population, of which nearly 180 million suffer from chronic diseases. According to the latest research on disease burden in China, chronic disease has become the main cause of death, and the increase in economic burden of chronic disease has far exceeded the rate of economic growth.[18,19] Aging and the increase in chronic diseases have further increased the demand for health care, and there is an urgent need for China to seek new health care providers. With the improvement of nurses' professional knowledge and skills, properly trained nurses are fully capable of managing chronic diseases. Foreign practice has also proved that nurses' prescription rights can bring many benefits, so granting nurses prescription rights will also become an important direction of health care reform in China.

Due to differences in law, education, and prescription qualifications, the scope and mode of prescribing drugs for nurses vary from country to country. Independent prescriptions were available in the United Kingdom in 2002, and supplementary prescriptions were added in 2003. Nurses can prescribe any drug within their capacity after the legislative reform in 2006, including controlled drugs (except those that produce drug dependence).[6] At present, all states in the United States have legislation, and nurses can exercise the right of prescription to a certain extent, and each state has its own prescription collection for nurses, which stipulates the drugs that nurses can prescribe.[20] Australian nurses have the right to prescribe in 2000, but only nurses in some areas have independent prescription rights, and nurses in other states can write prescriptions only under the doctor's supervision or an agreement with the doctor. For example, nurses in South Australia can prescribe drugs according to the prescription list, while nurses in Queensland are required to prescribe in accordance with an agreement signed with the doctor.[21] Therefore, it is also necessary for our country to make a list of prescriptions for nurses according to the actual clinical situation and nurses' qualifications.

The research group has explored the promoting factors of nurses' prescription rights in China,[22] the qualifications of prescribers,[23] and the specific prescriptions

of some specialist nurses.[24–28] According to the Clinical Drug Manual, the specific prescription contents of clinical specialist nurses have been studied, and the specific prescriptions of the central nervous system,[29] blood and hematopoietic system,[30] and digestive system[31] have been studied. The purpose of this study is to explore the prescription drugs and their prescription forms that may be prescribed by Chinese dermatology nurses.

2. Methods

2.1. Delphi Technique

The Delphi technique refers to several rounds of consultation with experts anonymously, and the expert group can end the consultation after the experts' opinions tend to be the same, to achieve the purpose of prediction.[32] Because the improved Delphi method improves the form, reincarnation, expert selection, and data processing. The improved Delphi method can end the consultation when the experts' opinions tend to be consistent, and there is no need for regular 4 rounds of consultation,[33] so this study uses the improved Delphi method and forms the expert consultation questionnaire through the semi-structured interview method.

2.2. Aim

The purpose of this study was to identify and reach consensus among experts on specific dermatological drugs that dermatologists may be able to prescribe.

2.3. Design

The survey, conducted from June 2020 to September 2020, included skin system drugs and prescription models. The Delphi technique was used to inquire dermatologists and nursing experts, and the dermatological drugs that might be prescribed by Chinese dermatology nurses were determined according to the consensus of the experts. According to Hasson et al.[34] in the Delphi survey technical research guide, there is no generally accepted proportion for Delphi because it depends on the samples, research purposes, and resources; McKenna[35] believes that the expert consensus should be at least 51%. Sumsion[36] believes that it should reach 80% of recommendations such as 70%, so our study sets 51% and 80% of the expert approval rates as the criteria for item deletion. The determination of the form of drug prescription begins to be calculated only after the experts' consensus on each drug is highly coordinated. In the same drug item, we choose the 2 prescription forms with the highest expert identification rate and calculate the ratio of the number of experts selected (large:small), that is, more experts/fewer experts. When the ratio is >1.5, it indicates that most experts prefer the former, that is, the former is chosen for the prescription form of this drug; when the ratio is <1.5, it means that both prescription modes can be used.[30,37]

2.4. Participants

Selected experts should reflect representativeness, authority, and extensiveness and have been engaged in technical work in this field for >10 years, and the number of experts is generally 15–50.[38] In this study, purpose sampling was used to recruit participants. We selected 18 dermatologists and 18 nursing specialists from tertiary hospitals in 10 provinces (Zhejiang, Shanxi, Fujian, Shanxi, Hubei, Guangdong, Jiangsu, Hebei, Shandong, and Jiangxi) and 2 municipalities directly under the central government (Beijing and Shanghai). The selection criteria of experts are (1) a pair of senior professional titles or above; (2) engaged in dermatology for ≥10 years; (3) a bachelor degree or above; (4) have a rigorous and realistic attitude, and participate voluntarily. Participants can participate in this study when they meet 2 of the first 3 criteria. Before participating in the study, the selected experts expressed great support for the study and signed an informed consent form.

2.5. Data collection

The consultation questionnaire is distributed in the form of e-mail, on-site distribution, and online electronic questionnaire (https://www.wjx.cn/jq/57870416.aspx), requiring participants to hand in the questionnaire within 10 d. During the consultation period, we will take regular e-mail or telephone reminders to ensure the normal conduct of the consultation. At the same time, participants can withdraw from the study at any time. We will also inform the participants of the results of each round of consultation.

2.6. Questionnaire design

First, we used "nurses," "nurse prescribing," and "dermatology" as keywords to search foreign language databases such as PubMed, CINAHL, and Scopus, and Chinese databases such an CNKI, Wanfang database, and VIP to find the content of nurse prescription. We translate the dermatological drugs that can be prescribed by dermatological nurses in Australia, New Zealand, the United Kingdom, the United States (Ohio) and South Africa according the list of nurses' medicine prescriptions of aforementioned countries. However, due to the differences in health policy, clinical practice, and nurse prescribing qualification, we also refer to

the clinical drug manual (fifth edition) published by the Shanghai Science and Technology Publishing House to develop the initial questionnaire of skin system. Second, according to the inclusion criteria of experts (with Delphi inclusion criteria), 4 dermatologists and 4 nursing experts were selected for semi-structured interviews with the initial questionnaire:

(1) Are the preliminary dermatological drugs commonly used in clinical practice?
(2) Are the items (drugs) contained in the preliminary questionnaire reasonable and comprehensive, and whether the expression is reasonable?
(3) Is there anything to add to the preliminary proposed drug category?

All experts agreed that vitamins were commonly used in dermatology, so vitamins were included in the use of dermatology drugs. Finally, the dermatology questionnaire of 117 kinds of drugs in 20 categories was formed.

At present, the main forms of drug prescriptions issued by foreign nurses are independent prescriptions, collaborative prescribing, and supplementary prescriptions. According to the actual clinical situation in China, our group discussion sets the forms of nurse prescription involved in this study as independent prescriptions and collaborative prescribing, and the supplementary prescription is divided into extended prescription and adjusted prescription. Therefore, this questionnaire contains the aforementioned 4 prescription forms.

2.7. Ethical considerations

This study did not involve direct medical concerns; therefore, no medical review was required. All participants who took part in the study completed informed consent forms.

2.8. Data analysis

We used Microsoft Excel and SPSS 22.0 to analyze the data. The qualitative data such as gender, educational background, and professional title were analyzed by frequency and percentage, and the quantitative data such as age and working years are expressed by mean ± standard deviation, and $\alpha = 0.05$ is used as the test level.

2.9. Validity, reliability, and rigor

To ensure the validity, reliability, and rigor of the questionnaire, we developed the initial dermatology questionnaire with reference to the list of foreign nurse prescriptions and the Chinese Clinical Drug Handbook (Fifth Edition)[39] and finally determined the final questionnaire through semi-structured interview.

3. Results

3.1. Basic characteristics of experts

In the first round of the survey, 36 experts were surveyed, of which 32 responded (response rate 88.89%, medical experts N = 16, nursing experts N = 16). Among them, experts >40 years old accounted for 46.88%, experts who have worked in the dermatology department for >15 years accounted for 50%, and experts with deputy titles accounted for 34.38%. This shows that the selected experts have rich experience in dermatology and have a full understanding of dermatological drugs; a master's degree or above accounted for 53.13%, indicating that most of the participants have a high level of knowledge, which can provide scientific and reliable analysis for this consultation. The general characteristics of experts are shown in Table 1.

3.2. Positive coefficient of experts

The positive coefficient of experts is generally expressed by the questionnaire recovery rate, which can be used for statistical analysis when the questionnaire recovery rate reaches 50%. It is good if the questionnaire recovery rate is >60%, and if it is >70%, it is considered very active, indicating that the participants' research participation and product are extremely high.[40,41] In the first round of this study, a total of 36 questionnaires were distributed; among these, 32 questionnaires were valid, of which 16 were answered by dermatologists and nursing experts, with an effective recovery rate of 88.89; in the second round, 32 questionnaires were distributed, all of which were recovered, with an effective rate of 100%. The recovery rates of the 2 rounds of questionnaires are >70%, indicating that the experts in this study are highly motivated and the results are reliable.

3.3. Authority coefficient of experts

The expert authority coefficient (Cr) is used to determine the expert authority degree, which is mainly determined by 2 factors: one is the expert's judgment basis for the consultation content, which is expressed by the judgment coefficient (Ca), and the other is the expert's familiarity degree to the consultation content, which is expressed by the familiarity coefficient (Cs).[37] Cr is equal to the arithmetic mean of Ca and Cs, that is, $Cr = (Ca + Cs)/2$. The Cr value is 0–1, and the higher the

Item	Medical experts (n = 16)	Nursing experts (n = 16)	Total	Percentage, %	P
Age, years	43.00 ± 5.70	41.19 ± 4.75			0.337
<40	3	7	10	31.25	
40–45	8	7	15	46.88	
46–50	4	1	5	15.63	
>50	1	1	2	6.25	
Gender					0.023
Male	9	2			
Female	7	14			
Working years	16.94 ± 6.70	16.81 ± 5.20			0.953
10–15	8	8	16	50	
16–20	5	5	10	31.25	
21–25	2	1	3	9.36	
26–30	1	2	3	9.36	
Education					0.004
Undergraduate	3	12	15	46.88	
Master's degree	12	4	16	50	
PhD	1	0	1	3.13	
Job title					0.550
Intermediate	9	10	19	59.38	
Deputy senior	5	6	11	34.38	
Positive senior	2	0	2	6.25	
Position					
Dean/vice dean	1	0	1	31.25	
Director	5	0	5	15.63	
Head nurse	0	9	9	28.13	

Table 1. Participant characteristics.

value is, the stronger the authority of the expert is. When the Cr is >0.8, it can be considered more reliable.[38] In this study, the Cr of the 2 rounds of consultation is 0.81, indicating that the degree of authority of the participants in this study is high, and the conclusion is more reliable.

3.4. Results of the first-round survey

According to the pre-set criteria, the first round of questionnaire entries (in this study refers to drugs) were deleted according to the expert approval rate of <51%. Based on this standard, a total of 16 drugs in 7 categories were deleted in the first round. The specific drugs deleted are as follows: (1) cleaning and protective astringents: formaldehyde; (2) insecticides: Radix Stemonae, benzene hexachloride, benzyl benzoate, crotamiton, and emetine; (3) external antimicrobial agents: domiphen and ethacridine; (4) corrosives: silver nitrate; (5) cytotoxic drugs: fluorouracil; (6) immunomodulators: interferon and imiquimod; and (7) others: finasteride, gibberellin, and psoralen.

3.5. Results of the second-round survey

According to the established deletion principle, items with an approval rate of <80% were deleted. Therefore, 35 drugs in 16 categories were deleted in the second round, and the specific drugs deleted are as follows: (1) cleaning protective agent: boric acid; (2) disinfection antimicrobial agent: phenol; (3) antipruritic agent: benzocaine; (4) insecticide: metronidazole and tinidazole; (5) topical antimicrobial agents: tetracycline, erythromycin, and benzoyl peroxide; (6) topical corticosteroid preparations: triamcinolone acetonide, clobetasol, and halcinonide; (7) retinoic acids: retinoic acid, isotretinoin, actinoic acid, etretinoic acid, retinoic acid, adapalene, and tazarodine; (8) keratin accelerators and relaxants: anthracene; (9) corrosives: trichloroacetic acid and lactic acid; (10) cytotoxic drugs: nitrogen mustard; (11) shading agents: hydroxychloroquine and β-carotene; (12) decolorants: hydroquinone and azelaic acid; (13) non-steroidal anti-inflammatory drugs: diclofenac diacid; (14) water-soluble vitamins: vitamin B6, folic acid, vitamin B12; (15) fat-soluble vitamins: carlo, alfacalcidol,

calcitriol, vitamin E and vitamin K; and (16) multiple vitamins and trace element preparations: vitamin Lipide.

Expert opinions tended to align after 2 rounds of consultation; as such, 2 rounds of expert consultations were conducted in this study. The specific process can be seen in Figure 1. Therefore, in the end, 63 drugs were retained, of which 1 drug is generally prescribed independently, 17 drugs tend to be prescribed collaboratively, and 45 are prescribed either independently or in collaboration with others. The results are shown in Table 2.

4. Discussion

4.1. General situation analysis of experts

In this study, 46.88% of the experts are >40 years old, 50% are experts who have worked for >15 years, and 34.38% are experts with the title of deputy, which shows that the selected experts have rich experience in dermatology and are familiar with dermatological drugs. It can provide scientific and reasonable evidence for this study. A master's degree or above accounted for 53.13%, indicating that most experts have received a high level of education and mastered high-level knowledge, which can provide scientific judgment. There are statistical differences in educational background and gender between the 2 groups of experts. First of all, in terms of gender, the number of men in the nursing expert group (N = 2) is significantly less than that in the medical group (N = 9), which may be due to the fact that male nurses, as a new profession, are bound by traditional thinking and the characteristics of female mindfulness. At present, the number of male nurses is relatively small, accounting for about 1% of the total number of registered nurses in China.[42] In addition, because the development of nursing in China is later than that of clinical medicine, the enrollment of the first batch of master's degree nurses began in 1990, so the degree of nurses is lower than that of doctors.

4.2. Analysis of the results of drug consultation

4.2.1. Analysis of cleaning, protection, and convergence consulting results

Experts recommend that dermatology nurses prescribe 7 cleansing, protective, and astringent medications. These drugs are widely used in a variety of skin problems, such as seborrheic dermatitis, acne, and eczema, in which skin cleansers are mainly used to remove exudates, scales, and scabs; protective agents mainly protect the skin by preventing external irritation;

Drug categories and names	Independent prescribing			Collaborative prescribing			Extension prescribing			Adjustment prescribing			Not recommended			Prescribing models
	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	
Cleaning protection astringent																
Calamine	4	7	11	8	7	15	3	2	5	1	0	1	0	0	0	Independent/ collaborative prescribing
Zinc oxide	1	2	3	13	9	22	1	5	6	1	0	1	0	0	0	Collaborative prescribing
Potassium permanganate	1	2	3	10	13	23	4	1	5	1	0	1	0	0	0	Collaborative prescribing
Starch	4	3	7	7	8	15	3	5	8	2	0	2	0	0	0	Collaborative prescribing
Silicones	4	1	5	2	8	10	6	7	13	3	0	3	1	0	1	Collaborative/ extension prescribing
Tannic acid	2	0	2	5	8	13	6	5	11	2	1	3	1	2	3	Collaborative/ extension prescribing

Table 2. Continued

Drug categories and names	Independent prescribing			Collaborative prescribing			Extension prescribing			Adjustment prescribing			Not recommended			Prescribing models
	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	
Zinc sulfate	0	0	0	4	7	11	5	3	8	4	3	7	3	3	6	Collaborative/ extension prescribing
Disinfection and antibacterial agent																
Nitrofural	2	3	5	10	6	16	1	5	6	1	0	1	2	2	4	Collaborative prescribing
Benzalkonium bromide	0	0	0	3	3	6	9	10	19	1	2	3	3	1	4	Extension prescribing
Antipruritic agent																
Menthol	2	1	3	7	10	17	7	3	10	0	1	1	0	1	1	Collaborative prescribing
Dyclonine	3	2	5	11	4	15	2	10	12	0	0	0	0	0	0	Collaborative/ extension prescribing
Camphor	1	4	5	5	2	7	8	7	15	2	2	4	0	1	1	Extension prescribing
External antimicrobial agent																
Bacitracin	1	1	2	5	5	10	7	7	14	1	2	3	2	1	3	Collaborative/ extension prescribing
Gentamicin	0	0	0	4	5	9	8	6	14	3	3	6	1	2	3	Extension prescribing
Colistin	0	0	0	8	5	13	5	9	14	2	0	2	1	2	3	Collaborative/ extension prescribing
*Clindamycin	1	1	2	5	8	13	6	3	9	3	3	6	1	1	2	Collaborative/ extension prescribing
Norfloxacin	0	0	0	6	3	9	7	10	17	2	1	3	1	2	3	Extension prescribing
*Mupirocin	1	2	3	13	12	25	0	2	2	1	0	1	1	0	1	Collaborative
*Fusidic acid	1	2	3	9	9	18	6	5	11	0	0	0	0	0	0	Collaborative
Mercuric aminochloride	0	0	0	5	8	13	6	6	12	3	0	3	2	0	2	Collaborative/ extension prescribing
*Benzoyl peroxide	11	15	26	3	1	4	1	0	1	0	0	0	1	0	1	Independent prescribing

(Continued)

Drug categories and names	Independent prescribing			Collaborative prescribing			Extension prescribing			Adjustment prescribing			Not recommended			Prescribing models
	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	
Topical corticosteroid preparation																
*Hydrocortisone	0	2	2	5	5	10	5	6	11	1	2	3	4	1	5	Collaborative/ extension prescribing
Mometasone furoate	0	1	1	9	2	11	4	9	13	3	2	5	0	2	2	Collaborative/ extension prescribing
Hydrocortisone butyrate	0	1	1	4	3	7	7	5	12	4	3	7	1	4	5	Extension prescribing
Cutin accelerator and relaxant																
*Coal tar	0	2	2	7	5	12	8	5	13	0	3	3	1	1	2	Collaborative/ extension prescribing
Pityrol	1	1	2	3	4	7	9	8	17	2	2	4	1	1	2	Extension prescribing
Ichthammol	2	2	4	6	5	11	4	5	9	4	3	7	0	1	1	Collaborative/ extension prescribing
Urea	2	2	4	8	9	17	5	5	10	1	0	1	0	0	0	Collaborative
Allantoin	2	2	4	8	9	17	6	4	10	0	1	1	0	0	0	Collaborative
Shading agent																
Para-aminobenzoic acid	1	0	1	6	5	11	5	7	12	2	2	4	2	2	4	Collaborative/ extension prescribing
Titanium dioxide	1	0	1	6	6	12	6	6	12	2	2	4	1	2	3	Collaborative/ extension prescribing
Phenyl salicylate	1	2	3	4	3	7	5	4	9	6	6	12	0	1	1	Extension/ adjustment prescribing
Nonsteroidal anti-inflammatory drugs																
Ketoprofen	0	0	0	2	6	8	6	5	11	4	3	7	4	2	6	Collaborative/ extension prescribing
Ibuprofen	0	1	1	2	7	9	3	5	8	7	1	8	4	2	6	Collaborative/ extension prescribing

(Continued)

Drug categories and names	Independent prescribing			Collaborative prescribing			Extension prescribing			Adjustment prescribing			Not recommended			Prescribing models
	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	
Etofenamate	0	0	0	1	4	5	7	5	12	4	6	10	4	1	5	Extension/ adjustment prescribing
Compound preparation																
Compound Clotrimazole	1	0	1	5	6	11	7	7	14	1	2	3	2	1	3	Collaborative/ extension prescribing
Compound halometasone	0	1	1	7	2	9	4	9	13	4	3	7	1	1	2	Collaborative/ extension prescribing
Compound econazole nitrate	1	0	1	2	4	6	8	7	15	4	1	5	1	4	5	Extension prescribing
Compound triamcinolone acetonide	0	1	1	4	2	6	4	8	12	6	4	10	2	1	3	Extension prescribing/ adjustment prescribing
Others																
Minoxidil	0	0	0	5	7	12	8	6	14	2	1	3	1	2	3	Collaborative/ extension prescribing
*Calcipotriol	0	0	0	5	4	9	7	7	14	3	2	5	1	3	4	Extension prescribing
Tacalcitol	1	1	2	6	3	9	6	8	14	3	3	6	0	1	1	Extension prescribing
Mucopolysaccharide polysulfate cream	1	0	1	7	6	13	4	4	8	2	4	6	2	2	4	Collaborative
Water-soluble vitamin																
Vitamin B1	1	2	3	8	8	16	6	4	10	0	2	2	1	0	1	Collaborative/ extension prescribing
Thiamine propyldsulfide	0	1	1	8	3	11	5	7	12	3	2	5	0	3	3	Collaborative/ extension prescribing
Fursultiamine	0	0	0	7	7	14	6	5	11	2	3	5	1	1	2	Collaborative/ extension prescribing
Vitamin B2	1	1	2	7	6	13	5	3	8	2	5	7	1	1	2	Collaborative
Riboflavin laurate	0	1	1	9	4	13	4	5	9	2	2	4	1	4	5	Collaborative/ extension prescribing

(Continued)

Drug categories and names	Independent prescribing			Collaborative prescribing			Extension prescribing			Adjustment prescribing			Not recommended			Prescribing models
	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	Doctor	Nurse	Total	
Nicotinic acid	1	0	1	5	7	12	7	2	9	1	2	3	2	2	4	Collaborative/ extension prescribing
Nicotinamide	1	2	3	7	3	10	6	6	12	1	2	3	1	3	4	Collaborative/ extension prescribing
Calcium pantothenate	2	1	3	6	7	13	7	6	13	1	1	2	0	1	1	Collaborative/ extension prescribing
Vitamin B4	1	2	3	7	5	12	5	6	11	2	2	4	1	1	2	Collaborative/ extension prescribing
Rutoside	1	0	1	7	7	14	5	6	11	2	3	5	1	0	1	Collaborative/ extension prescribing
Vitamin C	3	4	7	8	3	11	2	4	6	2	0	2	1	5	6	Collaborative
Fat-soluble vitamin																
Vitamin A	1	3	4	9	8	17	5	1	6	0	1	1	1	3	4	Collaborative
Vitamin D	2	2	4	7	8	15	3	2	5	3	3	6	1	1	2	Collaborative
ALPHA-D3	2	0	2	2	7	9	5	5	10	5	1	6	2	3	5	Collaborative/ extension prescribing
Multivitamin and trace element preparations																
Vitamin B Complex	2	0	2	9	9	18	5	6	11	0	1	1	0	0	0	Collaborative
Vitamin B complex	2	0	2	3	8	11	7	5	12	4	2	6	0	1	1	Collaborative/ extension prescribing
Vitamin B compound tablets	2	2	4	9	6	15	3	6	9	2	1	3	0	1	1	Collaborative
Soluvit N	2	3	5	3	4	7	7	4	11	2	4	6	2	2	4	Extension prescribing
Multivitamins	3	1	4	7	6	13	5	7	12	1	0	1	0	2	2	Collaborative/ extension prescribing
Caltrate with vitamin D	3	2	5	7	10	17	5	4	9	1	0	1	0	0	0	Collaborative

Table 2. Expert consultation results: nurses can prescribe dermatology medications and prescription models.

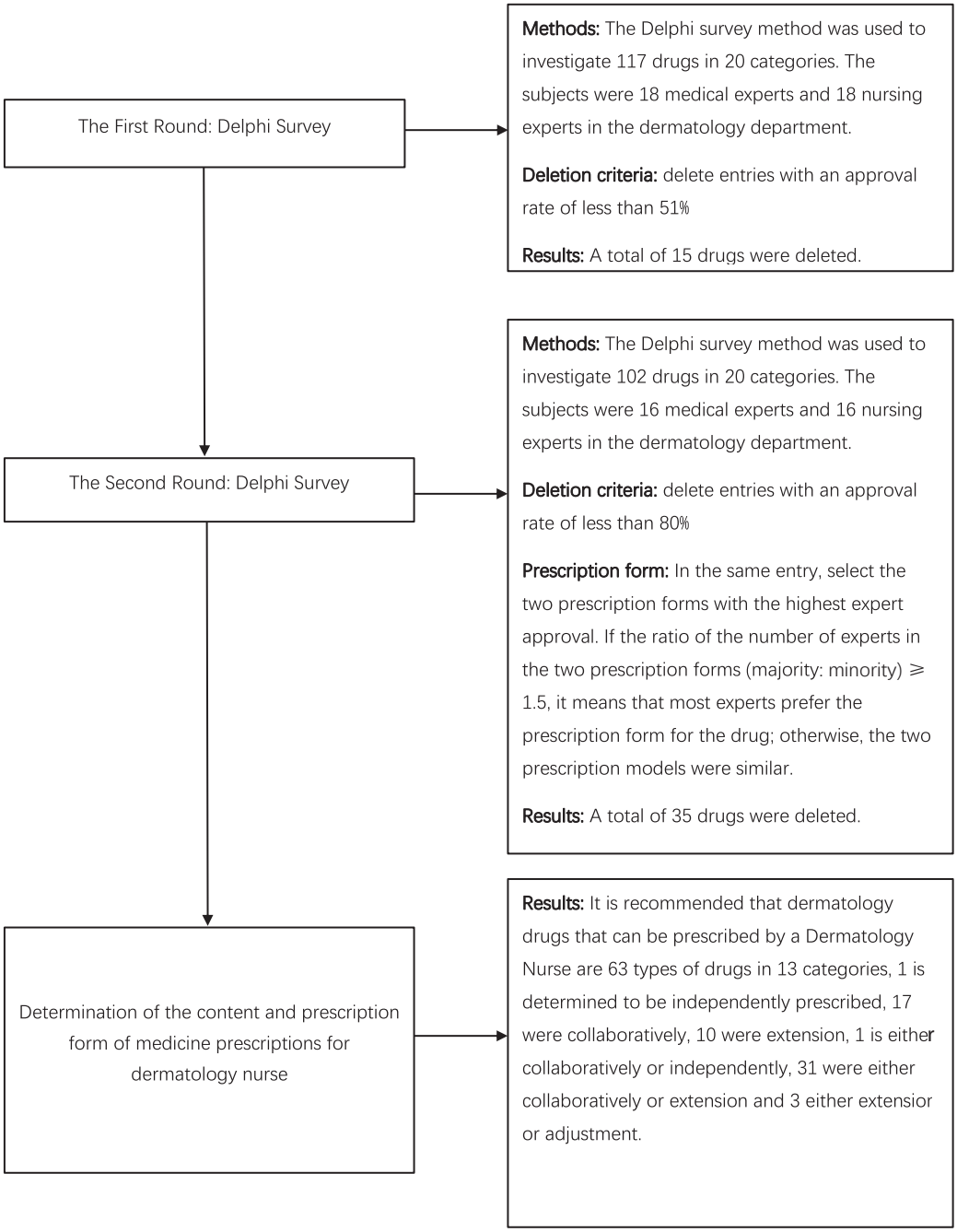

Figure 1. Flowchart of the modified Delphi.

and astringents act on skin proteins to promote tissue wrinkle, thus playing a role in anti-inflammation and detumescence.[39] Most of these topical drugs are mild, non-irritating, and safe, so experts suggest that all drugs, except boric acid and formaldehyde, should be retained. Boric acid exerts its bacteriostatic effect by combining with amino acids in bacterial proteins, which are mainly used for mild and small-area acute eczema, acute dermatitis, impetigo, bedsores, etc., but acute poisoning can occur when the topical dose is too high. In severe cases, shock can occur in addition due to slow excretion of boric acid, and long-term use will cause chronic poisoning.[43] Formaldehyde is a strong fungicide and leads to a strong irritation to the skin, and different

solubilities have different effects.[39] For the sake of drug safety and prudence, experts do not recommend nurses to prescribe these 2 drugs.

4.2.2. Analysis of disinfection and antibacterial agent results

Experts recommend that dermatology nurses prescribe 2 kinds of disinfection and antibacterial agents. Disinfection antimicrobial agents refer to topical drugs that can kill or inhibit bacteria. Bromobenzyl ammonium has fast and strong decontamination and antibacterial activity, low toxicity, low solubility, and no irritation and sensitization to tissue, so it is widely used in clinic.[39] Phenol can be used to treat mycosis alone and in combination to treat mild to moderate dermatitis, dermatophytosis, and other skin diseases, but because phenol is easily absorbed by the skin, it can cause poisoning. Highly soluble phenol has a corrosive effect.[39] This may be one of the possible reasons why dermatologist nurses are not recommended to prescribe phenol.

4.2.3. Analysis of antipruritic agent results

Experts recommend that dermatology nurses prescribe 3 kinds of antipruritic drugs. Antipruritic agents have the characteristics of cool, local anesthesia and anti-inflammation, thus play a role in relieving itching. Benzocaine plays a role in relieving itching by acting on sensory nerve endings. A variety of dosage forms of benzocaine have been developed abroad, such as tablets, ointments, and creams. At present, the dosage form of benzocaine is single in our country, and only the ointment form of benzocaine is used to relieve itching.[44] According to the news released by the National adverse Drug reaction Monitoring Center,[45] benzocaine may cause a serious adverse reaction, methemoglobinemia. Although this adverse reaction has not occurred in our country, it still needs to be treated carefully in the process of clinical use of this drug. This adverse reaction should be strictly prevented, which may be one of the possible reasons why dermatologists do not recommend that dermatology nurses prescribe benzocaine.

4.2.4. Analysis of insecticide results

Experts do not recommend that dermatology nurses prescribe pesticides in any form of prescription. These drugs are mainly used to treat skin diseases such as lice, scabies, and hair cysticercosis. Most of these are mainly for external use and have more adverse reactions, such as methemoglobinemia caused by the absorption of crotamiton nu the skin.[46] Tinidazole is effective on protozoa such as *Trichomonas vaginalis*, *Entamoeba histolytica*, and most anaerobes. Oral or intravenous drip is the route of administration. When the dose is high, nausea and vomiting may occur. Serious symptoms such as angioedema and temporary leukopenia may occur.[47] Therefore, based on safety considerations, the prescription right of nurses in our country is still in its infancy, and experts do not recommend dermatology nurses to prescribe such drugs.

By consulting *The British National Formulary*,[48] we found that British dermatology nurses can prescribe crotamiton (for the treatment of scabies and skin pruritus) and specify in detail the indications, precautions, and dosage of crotamiton in the prescription formulary. The possible reason for this difference is that the United Kingdom began to introduce prescription legislation in 1992, which has experienced decades of development.[6] So far, a complete set of nurses' prescription education, training, and legislative procedures have been formed. British dermatology nurses also experienced formal training before prescribing drugs and were able to master the indications, doses, and adverse reactions of drugs.[49] At present, Chinese nurse prescribing is still in its infancy, and most of the prescriptions that Chinese dermatology nurses may prescribe are drug safety prescriptions.

4.2.5. Analysis of external antimicrobial agent results

Experts recommend that dermatology nurses prescribe 9 kinds of topical antimicrobials. After 2 rounds of consultation, tetracycline and erythromycin were deleted, mainly in view of the serious abuse of antibiotics and the prevalence of drug resistance, so the control of antibiotics in our country is also stricter. Foreign studies have also shown that nurses should be emphasized as managers of antibiotics, rather than users. In addition, tetracycline and erythromycin have strong adverse reactions, in view of the rational use and safety of drugs. Experts do not recommend that dermatology nurses prescribe these 2 drugs, which is consistent with the findings of Jiao[50] on nurses' right to prescribe antimicrobials. After 2 rounds of expert consultation, external antimicrobial agents such as cecropin, gentamicin, and mupirocin were retained, and most of the drugs retained were mainly topical ointment, and local application was safer than oral or intravenous drip. This may be one of the possible reasons why dermatologists recommend that dermatology nurses prescribe such drugs.

In the United Kingdom, topical antimicrobial agents prescribed by dermatology nurses are fusidic acid, mupirocin, erythromycin, clotrimazole, econazole nitrate, ketoconazole ointment, miconazole ointment, ticonazole solution, amoprofen, griseofulvin, terbinafine, compound salicylic acid benzoic acid, iodine, and

benzoyl peroxide. In the United Kingdom, nurses of different professional levels are involved in a wide range of skin condition management in different clinical environments (including in-patient, outpatient, and community environments). Studies[51–53] have shown that British nurses treat an average of 5 skin diseases per week. Eczema, psoriasis, and leg ulcers are the most common diseases. Dermatology care, led by dermatology nurses, has been proved to be effective in the United Kingdom.[54]

4.2.6. Analysis of topical corticosteroid preparation results

Experts suggest that dermatology nurses can prescribe 3 kinds of topical corticosteroids. This kind of drugs have anti-inflammatory and anti-allergic effects and are widely used in dermatology. In recent years, due to the lack of understanding of this kind of drugs, such as the dose and intensity of the selected corticosteroids, and the phenomenon of corticosteroid abuse, the long-term use of such drugs can lead to more adverse reactions, and this kind of drugs also have strict drug withdrawal norms. Therefore, there are higher requirements for people who use such drugs. This may be one of the possible reasons why experts only recommend dermatology nurses to prescribe some topical corticosteroids.

In New Zealand, topical corticosteroids prescribed by nurses are hydrocortisone ointment, hydrocortisone butyrate ointment, betamethasone valerate, and clobetasol. In South Africa, nurses can prescribe hydrocortisone, betamethasone, and prednisone acetate. Thus, it can be seen that foreign countries also allow qualified nurses to prescribe some topical corticosteroids.

4.2.7. Analysis of retinoids results

Experts do not recommend that dermatology nurses prescribe tretinoin drugs in any form of prescription. Retinoids have the effects of anti-inflammation, regulating immune function, and anti-proliferation, which can treat >120 kinds of skin diseases. These are widely used in dermatology but are prone to adverse reactions in the process of use.[55] External use is often manifested as local adverse reactions of the skin, such as redness, tingling, and desquamation. High-dose oral administration has serious consequences such as malformation, visual disorders, and arthralgia, so these drugs usually have to detect various indexes at the same time, such as liver function and blood lipids. In addition, the strength of side effects is closely related to the dose, so in clinical application, the use of this kind of drugs should adhere to the principle of low dose and long-term use.[44,56] In view of the adverse reactions and complex application of retinoic acid, experts do not recommend dermatology nurses to prescribe such drugs for the time being.

UK, as the country with the most extensive prescription rights, also limits the number of retinoic acids prescribed by nurses. British nurses can prescribe adapalene and isotretinoin. Nurses in New Zealand can prescribe adapalene and tretinoin. Australian nurses can prescribe adapalene. Thus, it can be seen that foreign countries also prescribe some retinoic acid drugs to nurses.

4.2.8. Analysis of cutin accelerator and relaxant results

Experts recommend that dermatology nurses prescribe 5 kinds of keratin enhancers and relaxants. Cutin enhancer is a topical drug that promotes the normalization of the cuticular layer of epidermis, and the keratinolysis agent is a drug that promotes the exfoliation of the hyperkeratinized stratum corneum. As a traditional topical drug in dermatology, this kind of drug is still in clinical use. After 2 rounds of consultation, anthracene (also known as anthracenol) was deleted for the treatment of psoriasis. When anthracene is used externally, it has the characteristics of irritation and staining to the skin and has a certain toxic effect, so it needs to be monitored at the same time, which may be one of the possible reasons why dermatologists do not recommend dermatology nurses to prescribe this kind of drug.

Nurses' prescription lists in New Zealand and South Africa tend to ask nurses to prescribe tar, which is an anti-keratinizing drug, commonly used in solvents, ointments, and concentrated solutions for seborrheic dermatitis of the head and dandruff removal, as well as environmental disinfection. Combined with ultraviolet light can also treat psoriasis.

4.2.9. Analysis of corrosive agent results

Experts do not recommend that dermatology nurses prescribe corrosives in any form of prescription. A corrosive agent is mainly used for various types of warts, excessive growth of granulation tissue, etc., and cannot be used for normal skin. In the process of use, the normal skin around the focus need to be protected, and corrosives have strong corrosive characteristics. In view of this, experts do not recommend dermatology nurses to prescribe such drugs.

4.2.10. Analysis of cytotoxic drugs results

Experts do not recommend that dermatology nurses prescribe cytotoxic drugs in any form of prescription. Cytotoxic drugs are most commonly used in the treatment of tumors, and in recent years, they have been

frequently used in skin diseases. Such drugs also have certain killing effects on normal cells, which can cause serious consequences. Foreign nurses also have certain restrictive effects on such drugs. This kind of drugs mainly take the means of consultation with doctors, in view of the lack of special prescription training for dermatology nurses in our country. The right to open up such drugs remains to be considered, so the recognition rate of experts on such drugs is low, which is consistent with the results of Meng's[30] study on the right of nurses to antineoplastic drugs.

4.2.11. Analysis of immunomodulator results

Experts do not recommend that dermatology nurses prescribe immunomodulators in any form of prescription. Interferon can be used in the treatment of viral infectious skin diseases and skin tumors and can also be configured with urea to treat psoriasis, a variety of skin warts (such as condyloma acuminatum), and severe dermatitis. The common adverse reactions are fever, arthralgia, sleep disturbance, and so on. The serious adverse reactions are myelosuppression, leukopenia, autoimmune reaction, and so on. Imiquimod is a new type of topical immunomodulator[57] that can be used in the treatment of condyloma acuminatum and herpes simplex. It is not recommended to use imiquimod alone, and the effective time is 4–12 weeks, so the timing of imiquimod control is particularly important.[58] At present, Chinese dermatology nurses have a weak ability to evaluate the adverse reactions and treatment timing of such drugs, which may be the reason why dermatologists do not recommend dermatology nurses to prescribe such drugs. This is consistent with Meng's findings on immunomodulators.[30] In the United Kingdom, nurses need to renew their registration every 3 years and meet certain conditions, including ≥450 h of clinical practice and ≥35 h of professional-related continuing education in the past 3 years, so British nurses have a good mastery of drugs. This may be the possible reason why British nurses can prescribe imiquimod.[59]

4.2.12. Analysis of opacifying agent results

Experts recommend that dermatology nurses prescribe 3 kinds of opacifying agent. An opacifying agent is a skin protector that protects the skin from light, including inorganic shading agent and organic shading agent.[60] Hydroxychloroquine can be used not only as a shading agent but also as an antimalarial drug and immunosuppressant, with many and serious adverse reactions, such as central nervous system reactions and hematological changes.[61] β-Carotene has a wide range of uses; it not only can be used as a protective agent for skin damage but also has a preventive and inhibitory effect on tumor and cardiovascular diseases. Its adverse reactions are skin staining, menstrual disorders, and toxic reactions.[62] Therefore, for the use of this kind of drugs, we should fully understand the indications, matters needing attention, adverse reactions, and drug interactions and have higher requirements for the comprehensive ability of the prescribers. Experts may not recommend dermatology nurses to prescribe these 2 sunshades for the sake of this consideration.

4.2.13. Analysis of decolorizing agent results

Experts do not recommend that dermatology nurses prescribe decolorants in any form of prescription. Hydroquinone is a natural chemical decolorant and can be used for skin melanosis. Hydroquinone not only has a certain cytotoxic effect but also has a certain inhibitory effect on non-melanocytes.[63] Cytotoxicity can also occur in the long-term use of low concentration of hydroquinone; local overuse has a certain irritation to the skin, so in the process of use, we should pay attention to not only adverse reactions but also dose safety.[64] This may be one of the reasons why dermatology nurses are not advised to prescribe such drugs.

According to the BNF, UK nurses can prescribe azelaic acid for local treatment of mild to moderate inflammatory acne vulgaris. The United Kingdom has formed a systematic theoretical and practical training process of nurses' prescription rights, and after British nurses have obtained the prescription rights, they still need to receive regular education in related professional knowledge, so they have a good grasp of the indications and doses of drugs.

4.2.14. Analysis of nonsteroidal anti-inflammatory drugs results

Experts do not recommend that dermatology nurses prescribe decolorants in any form of prescription. Hydroquinone is a natural chemical decolorant and can be used for skin melanosis. Hydroquinone not only has a certain cytotoxic effect but also has a certain inhibitory effect on non-melanocytes.[63] Cytotoxicity can also occur in the long-term use of a low concentration of hydroquinone; local overuse has a certain irritation to the skin, so in the process of use, we should pay attention to not only adverse reactions but also dose safety.[64] This may be one of the reasons why dermatology nurses are not advised to prescribe such drugs.

The non-steroidal anti-inflammatory drugs prescribed by nurses in Australia are diclofenac sodium,

ketoprofen, meloxicam, naproxen sodium, piroxicam, tioprofen acid, tyroprofen, sodium methoxynaphthalene propionate, and tioprofen acid. Australian nurses apply for prescription rights only if they have completed the required master's degree and completed a 5000-h advanced course, followed by a review by the Australian Nursing and Midwifery Committee on their eligibility for NP certification.[65] Therefore, Australian NPs have a high level of knowledge and technology.

4.2.15. Analysis of compound preparation results

Experts suggest that dermatology nurses prescribe 4 kinds of compound preparations. Compound preparation refers to 2 or more kinds of drugs compared with a single drug. Compound preparation has better efficacy and fewer adverse reactions. For example, compound halomethasone can be used to treat skin diseases such as dermatomycosis and contact dermatitis, with few adverse reactions, occasional irritating symptoms of local skin, and a high clinical application effect and safety.[66] This may be the reason for the high recognition rate of this kind of drugs by experts.

4.2.16. Analysis of calcineurin inhibitor results

Experts do not recommend that dermatology nurses prescribe calcineurin inhibitors in any prescription form. Tacrolimus and pimecrolimus are topical calcineurin inhibitors commonly used in atopic dermatitis.[67] They were put on the market in 2000 and 2001 in the United States. 5-year clinical application in the United States shows that the 2 drugs have good safety and efficacy. Tacrolimus and pimecrolimus were put on the market in China in 2005 and 2006, respectively. Clinical studies on these drugs have shown that they are effective quickly and have little adverse reactions.[68] However, there has been controversy about the carcinogenic effects of such drugs.[69–71] In 2010, the US Food and Drug Administration concluded by summarizing 6 studies (a total of 6 million patients) that the increased incidence of lymphoma may be associated with the use of tacrolimus. Neither pimecrolimus is mentioned in this report nor is the causal relationship established, especially in children; the long-term safety of tacrolimus remains to be further studied. This may be the reason for the low recognition rate of such drugs by experts.

4.2.17. Analysis of water-soluble vitamin results

Experts recommend that dermatology nurses prescribe 11 water-soluble vitamins. Vitamins as one of the essential organic materials for the human body, proper supplements can strengthen the system, and excessive supplements will lead to serious consequences such as poisoning.[72] In recent years, vitamins are widely used in dermatology. Water-soluble vitamins can be dissolved in water, so these can only be preserved in a small amount in the body and are easy excreted from the body.[73] Water-soluble vitamins are easily mistaken for "nutrients" and lead to overuse, while overuse can easily lead to a variety of adverse reactions; for instance, long-term extensive use of vitamin B6 can cause severe peripheral neuritis, and long-term use by pregnant women can have a serious impact on the fetus.[74] Thus, special attention should be paid to the interaction with other drugs during the use of vitamin B6. Although most of the adverse reactions of water-soluble vitamins are small, in view of the current vitamin abuse and medical safety, prescribers should strictly grasp the indications of diseases, adverse drug reactions, and interactions with other drugs.[75,76] This may be the reason why experts only recommend dermatology nurses to prescribe some water-soluble vitamins.

4.2.18. Analysis of fat-soluble vitamin results

Experts recommend that dermatology nurses prescribe 3 fat-soluble vitamins. Fat-soluble vitamins are insoluble in water and fat, so fat-soluble vitamins can be preserved in the human body for a long time.[77] Fat-soluble vitamins are drugs that can easily lead to allergies. According to Wang and Zhao,[78] the sensitization factors of fat-soluble vitamins may be related to infection and the drug itself, such as light avoidance and combined use of drugs. A number of studies have shown that vitamin K1 is the most common drug that causes allergies. Prescribers should correctly give corresponding fat-soluble vitamins according to disease symptoms and different populations, reduce the incidence of adverse drug reactions, and improve clinical safety, which may be the reason why dermatologists advise dermatology nurses to prescribe some fat-soluble vitamins.

4.2.19. Analysis of multivitamin and trace element preparations results

Experts suggest that dermatology nurses prescribe 6 kinds of multivitamin and trace element preparations. Vitamins and trace elements are essential to the human body and can usually be taken from food. Prescribers should choose appropriate preparations according to individual differences when prescribing such drugs. Before that, they should first know the intake of vitamins and trace elements necessary for the human body. Pay attention to the problems of combined use of drugs, matters needing attention and adverse reactions,[79] such as more adverse reactions of Vidomegin, which can cause

symptoms such as hypotension, allergy and digestive tract reactions. Shock may occur during use, so such drugs should be treated more cautiously, which may be the reason why experts only recommend dermatology nurses to prescribe some multivitamin and trace element preparations.

4.2.20. Analysis of other drugs results

Experts recommend that dermatology nurses prescribe minoxidil, carpotriol, tacasil, and polysulfonate mucopolysaccharide cream. In 1996, the US Food and Drug Administration used minoxidil for the treatment of alopecia areata. In China, 1%, 2%, and 5% of the preparations were also used for clinical treatment. Minoxidil is also rarely absorbed by the skin because of its few adverse reactions, so the solubility of this drug in the blood is low and will not have an antihypertensive effect. A meta-analysis shows that 5% of minoxidil can effectively treat alopecia areata with few adverse reactions. Capotriol and tacasil can be used in the treatment of psoriasis vulgaris, both of which are derivatives of vitamin D3. Experts agree that in the treatment of psoriasis, vitamin D3 derivatives is one of the clinical first-line therapeutic drugs for the treatment of psoriasis vulgaris,[80] and there are few adverse reactions in the application of calcitriol and tacasil.[81–83] Hirudoid mucopolysaccharide polysulfate cream, alias Hirudoid, has the effect of anti-inflammation and detumescence. Hirudoid is also effective in the treatment of eczema. According to a meta-analysis,[84] Hirudoid adjuvant treatment of infantile eczema (no obvious exudation of skin lesions) is superior to conventional treatment with less adverse reactions. In view of the wide clinical application of these 4 drugs and fewer adverse reactions, this may be the reason why experts recommend dermatology nurses to prescribe these 4 drugs.

4.3. Difference in analysis of prescribing rights of nurses at home and abroad

Due to the differences in health policy, clinical practice, and nurses' prescription education, there are differences in the specific contents of nurses' prescription rights in different countries. The United States granted nursing prescription in 1969, and the development process of nursing prescription has reached 52 years. After a long process of development, the United States has established a thorough training program for nurse prescribers and relevant laws. Nurses in all states in the United States can exercise prescription rights within a certain range, but each state has its own prescription book, which prescribes the drugs that nurses can prescribe. For example, registered nurses, specialist nurses, midwives, and practice nurses in Ohio in the United States can accurately judge the indications of drug treatment after training (up to 45 h within 3 years) and practical training (working with doctors for 1500 h). After the initial treatment after advanced health assessment, nurses can have the right to prescribe appropriate drug doses, provide appropriate patient education, and test patients' responses to drug treatment.[85,86] Nurses in Ohio can prescribe 15 kinds of 547 drugs, including nutrients and nutrients, hematology, endocrine, and metabolism.[87,88] Britain began to develop the right of prescription for nurses in 1992. After 29 years of development, Britain has become the country with the most extensive power of prescription. Nurses will have prescription rights in the United Kingdom if they have a bachelor's degree, complete 3 years of working experience, 26 d of theoretical study, and 12 d of practical training, pass the final examination (including the final written examination (including 20 short answers and multiple-choice questions in pharmacology, where a score of >80% is considered pass) and numerical evaluation (a score of 100% is considered pass), successfully write prescriptions that require drug calculation, conduct a systematic and detailed examination of practice in a simulated learning environment (for example, objective structured clinical exam, OSCE) or related field practice environment (including video), signed by the instructor).[89–91] After the legislative reform in the United Kingdom in 2006, nurses can prescribe any drug within their capacity, including controlled drugs (except those that produce drug dependence). These include 16 categories of 1567 drugs, including for the gastrointestinal system, cardiovascular system, respiratory system, and musculoskeletal system.[92]

Thus, it can be seen that the United States and the United Kingdom have formed a complete set of training programs for nurses' prescription rights.

The research on nursing prescription in China is relatively late and is still in its infancy, and the relevant education and training are still lacking. The advanced practical nurse training courses offered by the Hong Kong Special Administrative region cover knowledge related to prescription rights, such as health care system, health policy, advanced pathophysiology, pharmacology/Chinese medicine dietotherapy, health assessment, and disease treatment. Nurses in Taiwan can become practicing nurses after 184 h of discipline courses and 504 h of clinical practice training. They can issue tests, drug receipts, etc., and doctors only need to make up within 24 h.[93] In the Peking University School of Nursing, China, the chronic disease practice nurse training courses offered include pathophysiology,

pharmacology, internal medicine, anatomy, advanced health assessment, diagnostics, and other related courses. Zhang[23] suggested adding laws and regulations related to nursing prescription rights, nursing intervention, and pharmacology to undergraduate nursing students. Dou et al.[94] determined the training content of midwife prescription rights in China through 2 rounds of expert consultation. Thus, it can be seen that there are still gaps in the relevant education and training system in China, and there are no relevant legislative provisions to nurses' prescription rights in China. These 2 aspects are the possible reasons for the lagging development of nurses' prescription rights in China. Although through this study, the drugs that may be prescribed by dermatology nurses in China are obtained through 2 rounds of consultation with experts using the Delphi method, in view of the fact that the education, training, and legislation related to nurses' prescription rights in China need to be further developed, and the drugs that can be prescribed by dermatology nurses in China are different from those in foreign countries.

5. Conclusions

After 2 rounds of expert argumentation, dermatologists and nursing experts suggest that Chinese dermatological nurses with certain training can prescribe 13 categories and 63 kinds of dermatological drugs. Among them, 1 drug is independent prescribing, 17 kinds are collaborative prescribing, 10 kinds are extension prescribing, 1 kind is independent prescribing or collaborative prescribing, and 3 kinds are extension prescribing or adjustment prescribing.

In addition, different dosage forms and doses of drugs can affect the therapeutic effect of the disease, but this study only focuses on the types and forms of drugs that nurses can prescribe, which should be further studied in future.

Limitations

Although the experts selected in this study are from many provinces, the experts from the Hong Kong Special Administrative Region, China and Taiwan, China who gave nurses the right of prescription were not selected. The types of experts in this study were medical experts and nursing experts, which were not included as medical policy managers. Therefore, regions and types of experts should be increased in future studies to improve the extensiveness and representativeness of experts to further increase the reliability and scientific nature of the research results.

Ethical approval

Ethical issues are not involved in this article.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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