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Research article

Uses of Traditional Chinese Medicines and Western Medicines in Type 2 Diabetes: Chinese Physician's Prescribing Preferences and Patterns

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Abstract

Objective: To investigate the Chinese physician's prescribing preferences and patterns of Traditional Chinese Medicines (TCMs) and Western Medicines (WMs) in type 2 diabetes, and to reveal the reasons behind, and provide the advice on treating diabetes by WMs and TCMs. **Methods:** Ten physicians from a general hospital in which both TCMs and WMs medical services were recruited. A face-to-face semi-structured interview was conducted to collect the information and followed by thematic analysis. The prescriptions were collected from 412 diabetes patients' medical records followed by a content analysis. **Results:** From the interview, both TCM and WM physicians agreed that WMs were more preferable in controlling the blood glucose, while TCMs were usually used in the early stage of type 2 diabetes or to relieve the symptoms and prevent the complications. Prescribing preference was affected by their attitude towards TCMs, education background and experience of the physicians, characteristic of drugs, and the patient's conditions. In the quantitative study, more than 90% prescriptions contained WMs. TCMs were prescribed in only 33 prescriptions with only 8 of them having TCMs solely, and 25 having both TCMs and WMs. The qualitative and quantitative results were consistent. **Conclusion**: WMs were used as a first-line diabetes treatment. To increase the use of TCMs, improvement in physician experiences and development of more effective TCM products were required.

Keywords: prescribing pattern, attitudes, traditional Chinese medicines, western medicines, type 2 diabetes

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บทความวิจัย

ยาแผนจีนและยาแผนตะวันตกที่ใช้ในโรคเบาหวานประเภท 2: ความนิยมและรูปแบบการสั่งใช้ยาของแพทย์

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาความนิยมในการสั่งยาของแพทย์แผนจีนและศึกษาและศึกษารูปแบบการสั่งใช้ยาแผนจีน (Traditional Chinese Medicines: TCMs) และยาแผนตะวันตก (Western Medicines: WMs) ในโรคเบาหวานประเภท 2 และเพื่อค้นหาเหตุผลและสรุปคำแนะนำในการรักษาโรคเบาหวานโดย WMs และ TCMs **วิธีการ:** แพทย์ 10 คนจากโรงพยาบาลทั่วไปแห่งหนึ่งทั้งจากแผนก TCM และ WM ได้รับการคัดเลือก การสัมภาษณ์กึ่งโครงสร้างแบบตัวต่อตัวถูกใช้รวบรวมข้อมูลและตามด้วยการวิเคราะห์แก่นสาระ -ข้อมูลการสั่งใช้ยาถูกรวบรวมจากเวชระเบียนผู้ป่วยเบาหวาน 412 ราย และสรุปโดยการวิเคราะห์เนื้อหา **ผลการวิจัย:** จากการสัมภาษณ์ ทั้งแพทย์ TCM และ WM เห็นว่า WMs เป็นที่นิยมมากกว่าในการควบคุมระดับน้ำตาลในเลือด ในขณะที่ TCM มักจะใช้ในโรคเบาหวานประเภท 2ระยะเริ่มต้น หรือเพื่อบรรเทาอาการและป้องกันภาวะแทรกซ้อน ความนิยมในยาเป็นผลมาจากทัศนคติที่มีต่อ TCMs การศึกษา และประสบการณ์ของแพทย์ ลักษณะของยา และอาการของผู้ป่วย ในการศึกษาเชิงปริมาณ ใบสั่งยามากกว่าร้อยละ 90 มียา WMs ส่วน TCM ถูกส่งใช้ในใบสั่งยาเพียง 33 ฉบับ โดยมีเพียง 8 ใบเท่านั้นที่มี TCM เพียงอย่างเดียวและ 25 ใบมีทั้ง TCM และ WM ผลการรศึกษาเชิงคุณภาพและเชิงปริมาณมีความสอดคล้อง **สรุป:** WMs เป็นยาที่ถูกเลือกก่อนใช้ในการรักษาโรคเบาหวาน ในการเพิ่มการสั่งใช้ TCMs จำเป็นต้องให้แพทย์มีประสบการณ์และต้องพัฒนาผลิตภัณฑ์ TCMs ให้มีประสิทธิภาพมากขึ้น

คำสำคัญ: รูปแบบการสั่งยา ทัศนคติ การแพทย์แผนจีน การแพทย์ตะวันตก โรคเบาหวานประเภท 2

Introduction

Traditional Chinese medicine (TCM) is a medical science with a completely different theory to Western Medicine (WM). The theory of TCM has been formed and developed in the process of Chinese fighting against diseases over thousands of years. Following the TCM theory, the unique perspectives on health maintenance, fitness, disease prevention and treatments were created (1). Nowadays TCM is still widely used in China and become more important in the development of health care strategies. In the 18th National Congress in 2012, the Chinese government has given the priority to drive the development of TCM, and numerous policies have been issued. One of the most important policy, Outline of the Strategic Plan on the Development of Traditional Chinese Medicine (2016-2030) (2), covered TCM in terms of clinical practices, healthcare, research and development, education, industry and cultures. Supported by these policies, TCM would have the same status as WM in acceptance, legal status, academic development, and practical applications. TCM would play a more important role in the reformed medical care system in China. In this plan, by 2020 every Chinese citizen would have the access to the basic TCM services, and TCM services would cover all areas of medical care before 2030.

In China, the licensed physicians are classified into four groups, including WM physicians, traditional medicine physicians, public health physicians and dentists, based on the education background. The traditional medicine physician could be further sub-grouped as TCM physicians, TCM & WM physicians, and TCM in ethnic medicine physicians, according to their practices (3). Physicians have to pass the examination of medical practitioners to get the certificate before they can prescribe (4). Regulations for prescribing for physicians includes the Law of the People's Republic of China on Practicing Medicine, Management Approach on Registration of Practicing Physicians and Prescription Management Policy. However, there is no clear rules for the right of prescribing TCM and WM in these policies, which is an important disadvantage of the Prescription Management Policy that was issued by the National Health Commission in the year 2006 (5). In medical school, curriculum for WM physicians regularly includes the course of TCM, so that Chinese WM physicians have knowledge on using TCMs in the case they thought necessary. Meanwhile, the TCM physicians who have learned WMs in medical school could prescribe WMs together with TCMs. The combination of WMs and TCMs was considered to optimize the benefits from both in real-life practices by many physicians, but not all. A previous study in a Chinese cancer hospital at Shanghai showed that cancer physicians generally informed and supported their patients in using TCM (6). On the contrary, a similar research was conducted in Hong Kong, the result showed that WM physicians were less likely to refer patients to TCM treatments (7). There were limited number of research on prescribing patterns of WM and TCM physician.

In China, the number of diabetic patients were approximately 114 million, and this number accounted for the highest percentage of diabetic patients in the world (8). Using TCMs for diabetes could be traced back to around 2000 years ago. The evidences of TCMs for treating diabetes were recorded in two famous TCM ancient books, which are "Huangdi Neijing" and "Synopsis of prescription of the gold chamber" (9). The State Food and Drug Administration (SFDA) has approved 30 TCM formulas to be produced as products for diabetes treatments in China (3), and 18 out of these 30 formulas have been covered in Medical Health Insurance (5). These commercial drug products together with WMs, were provided for diabetes patients, through physicians' prescription. The current study was conducted upon the specific Chinese health system, to review the prescriptions for Type 2 Diabetes (T2D), and reveal the understanding of physicians toward WMs and TCMs in the real-world prescribing practice.

Methodology

Study Design

This study proposal was approved by Khon Kaen University Ethics Committee in Human Research (Reference number: HE612309). This study was a mixed-method study. Briefly, a qualitative study was conducted to investigate the physician's prescribing preferences of WMs or TCMs for treating T2D patients by a semi-structure face to face interview. As the support to the result of interview, a quantitative study was conducted by collecting the prescriptions of T2D patients to study physicians' prescribing patterns.

Subjects

The study was carried out in the Affiliated Hospital of Guangxi University of Chinese Medicine, which was one of the top 3 biggest hospitals of integrated Chinese medicine and western medicine in China. This hospital provides both TCM and WM health services to over 1 million people per year. In this hospital, there were 10 physicians in the diabetes out-patient clinic, and they were included in the interview study. The physicians were classified as western medicine physicians (WMD), who graduated and licensed from WM curriculums; and traditional Chinese medicine physicians (TCMD), who graduated and licensed from TCM curriculums. There were 4 WMDs and 6 TCMDs in the current study.

In the quantitative study, the prescriptions were collected from the medical records of patients in the diabetes out-patient clinic, where there were approximately 100-200 diabetes prescriptions per day. The inclusion criteria of patients were (a) aged 18 years or older, (b) were diagnosed as T2D, (c) were prescribed at least one oral diabetes medication; either traditional Chinese medicines (TCMs), or western medicine (WMs), or both TCMs & WMs, and (d) were prescribed the regimens for more than 6 months before the study, (e) were able to communicate in mandarin (national language of China), and could describe their medication taking behaviors. The patients were excluded in cases of (a) having someone to take care of their medication taking (b) were diagnosed of serious psychiatric illnesses or dementia, (c) pregnant or being lactating women, or (d) denied to participate in this study. If the subjects were excluded, then the next consecutive patients would be contacted.

Qualitative Data Collection

Face-to-face semi-structured interviews with language of Chinese mandarin were conducted by the researcher. The time for interview was approximately 20 minutes for each physician. The interview was set up in a seperate office room. The guideline of the semi-structured interview was designed to focus on the preferences of physician using either TCMs, or WMs, or both TCMs & WMs for treating T2D patients. The interview questions were constructed upon the model of physician prescribing decision in the previous systematic review (10). The questions composed drug characteristics, benefit of drugs, and patients requesting for those drugs. They also focused on knowledge of TCMs and WMs, risks and benefits, balance of risks and benefits, patient characteristics as candidates for TCMs or WMs or both TCM&WM. In addition, physician demographics were collected as well. All interviews were recorded as electronic audio files.

The semi-structured interview questions were examined of its content validity by three experts before using in the pilot study. Three physicians working in the other hospitals were invited to the pilot study. After the pilot study, interview questions were revised to be the final version for interview.

Quantitative Data Collection

The prescriptions of interviewed patients were collected from patients' medical records when they were waiting for physicians. Convenience sampling was used for selecting the prescriptions. The information of medications and the types of physicians were recorded. More than 400 prescriptions were supposed to be collected. All data were collected by the researcher (YH).

Thematic Analysis of Interview

The interview were conducted and terminated when reaching inductive thematic saturation which the transcribing data did not emerge any new codes or themes (11). Interview records were transcribed by the researcher (YH) after the interview, and thematic analysis was carried out with the following 6 steps; (a) familiarizing with interview data: The transcribing data were read and reread, and the initial ideas were noted by the researcher. (b) generating initial codes: the interesting features of data were generated to initial codes, and collating data relevant to each code. (c) searching themes: the potential themes were discovered by collating codes. (d) reviewing themes: the relation of themes were checked with coded extracts and the entire data set, and the most relevant themes were labelled. (e) defining and naming themes: The specificity of each theme were refined, and each theme was generated a clear definition and name. (f) producing report: The results were summarized. The vivid and compelling extract examples were selected and related back to the research question and literature, and writing report.

Quantitative Data Analysis

The prescriptions were classified by being TCM or WM physician. Prescribing patterns of TCM, WM, both TCM&WM were compared with the results from interviews for validation.

Results

Physician Demographics

The age of 10 physicians ranged from 37 to 55 years with an average of 46.80 years (SD=7.22). Three 3 of them were male and 7 were female. According to the educational background, there were 6 TCMDs and 4 WMDs. Five out of 6 TCM physicians graduated from TCM curriculums, while one of them studied both TCM & WM and then graduated from TCM curriculums. Three out of 4 WM physicians graduated from WM courses, but one of them took postgraduate course in TCMs after the WM bachelor degree. Three of them were chief physicians, 6 deputy chief physicians, and one attending physician. All of them had been physicians for more than 10 years. The longest period of practicing time was 33 years, and the average practicing time was 23.70 (SD=8.93) years.

Prescribing preferences

In thematic analysis, the following themes were emerged from interview: prescribing preferences were influenced by the factors of physicians, drugs and patients. The themes and subthemes were summarized in Table 1.

Table 1. Themes and subthemes of prescription preferences

Themes	Subthemes
Prescription preferences were influenced by	
physicians	attitudes of physicians
	education background
	experiences
drugs	TCM and WM efficacy
	drug characteristics
	cost of TCMs
patients	patients' demand
	patients' conditions

WM = western medicine

TCM = traditional Chinese medicine

Theme 1: Influenced by physicians

a. Physician's attitudes toward TCMs and WMs

In the interview, the following synonyms were used by the physicians to describe WMs' hypoglycemic effect, such as "fast", "quick", "powerful", "significant", "obvious" and "acute cases", or "high blood glucose cases". When the physician talked about TCMs in T2D, "relieve T2D symptoms", "prevent complications", "slow", "long-term treatment", "insufficient hypoglycemic effect" and "mild cases" were used.

"…The WMs are effective, I know little about TCMs and I don't prescribe them for my patients…" (K7, WM physician)

"…Each has its advantages. For western medicines, they are effective with rapid decrease of blood glucose. Some patients using WMs have their blood glucose decreased, but symptoms do not relieve. For TCMs, they are good at relieving symptoms and slowly deceasing blood glucose…" (K2, TCM physician)

"…I am a TCM doctor, I am sure the TCMs work for diabetes, I know some experts prescribed them and got a good result,…,but I am not so confident to prescribe TCMs to the patients. Doing so needs relevant skill and experiences…" (K10, TCM physician)

The interview result showed the preference for WMs and un-confidence in TCMs. Basically, all physicians had a positive attitude towards WMs: WMs were more effective than TCMs by having quick and remarkable effect on blood glucose. The opinions were unanimous for both WM and TCM physicians.

Among the 10 physicians, 7 of them showed positive attitudes towards TCMs. They contended that TCMs were beneficial in relieving diabetes symptoms, preventing the complications and restoring normal body function. A combination of WMs and TCMs was considered. However, the weakness of TCMs was mentioned, such as insufficient hypoglycemic effect and its slow effect. The physicians also mentioned that more experiences were important for them to prescribe the TCMs. They expected quick control of blood glucose in diabetes patients. In a brief summary, physicians' attitudes towards WMs and TCMs were an important factor influencing their prescribing pattern in treating diabetes.

b. Education background

For WM physicians, education background played the vital role in prescribing process.

"…I don't know much about TCM... I saw a better clinical effectiveness when the patients used both TCM & WM, compared to that in patients with only WMs. TCM&WM may relieve the symptoms of DM…"(K5, WM physician)

"…WMs significantly decrease blood glucose. Some WMs specially treat complications..." (K1, TCM doctor)

"…The WMs are effective, I know little about TCMs and I don't prescribe them for my patients…" (K7, WM physician)

Of the 6 TCM physicians, all of them said they would prescribe TCMs for diabetes patient depending on the patients' conditions either TCMs alone or combination with WMs. Of the 4 WM physicians, 2 of them said they would just prescribe WMs. One said he would prescribe TCM products only when the patients asked for them, and another with postgraduate education in TCM would prescribe TCM products.

c. Experience

In this study, 10 physicians were all with more than 10 years' experience in diabetes treatment. They showed us that their experience helped in making decision in using WMs or TCMs.

"…In my experiences, most of patients visited me with an urgent situation. I prescribed WMs to them. Some of them used both WMs & TCMs. I rarely prescribed TCMs alone to treat type 2 diabetes…" (K6, WM physician)

"…WMs have reliable effects on reducing blood glucose*. We never have any clinical research with TCM products. TCMs show the insufficient hypoglycemic effect, but TCMs can be used to improve health and relieve symptoms, such as thirsty…." (K8, WM physician)*

Six physicians, including all WM physicians and two TCM physicians, said WMs were the first choice to treat T2D. Three TCM physicians said TCM & WM therapy were their first choice depending on patients' conditions. One TCM physician expressed that he

tended to use TCMs as his first choice. Two of WM physicians said they did not use TCMs. On their experiences, TCMs were used to relieve symptoms and improve health.

Theme 2: influenced by drug

a. Efficacy of TCMs and WMs

Efficacy of the medicine was the prior concern for both WM and TCM physicians. All of 10 physicians agreed with a better efficacy of WMs, so that WMs were a regular drug of choice for treating diabetes although 6 of them were the TCM physicians. Talking about TCMs, two TCM physicians agreed that TCMs can be used in the early stage of diseases; all of TCM and most of WM physicians agreed that TCMs were functioned in preventing complication or relieving symptoms of T2D.

"…To control complications of the disease, TCMs are better than WMs...such as in peripheral neuritis, diabetic nephropathy…" (K1, TCM physician)

"…WMs significantly decrease blood glucose. Some WMs s treat some complications..." (K1, TCM doctor)

"…The efficacy of TCMs is delayed. Their efficacy is varied. Patients want immediate effect, but TCMs do not work..." (K2, TCM physician)

b. Drug characteristics

All of physicians pointed out that the use of WMs was "easy" and "convenient", while TCMs had a "bad taste" and needing "high dosage".

"…WMs are convenient to use. And some of them are used with one pill once a day, it is very convenient…" (K9, TCM physician)

"…The dosage of TCMs is higher, and the taste of TCMs is bad. Their effect on reducing blood glucose is not obvious. TCMs should be used on individual basis depending on patient's situation and syndromes. Every T2D patient may take different TCMs. But we do not have many TCM products to meet every patient's syndromes…" (K9, TCM physician)

c. Cost of TCM

Two WM physicians mentioned that the cost of TCMs would influence the medical use and cause patient's noncompliance.

"….Generally, the effect of TCMs will apparent after several years of use. The point is medication adherence of TCMs is hard to achieve, because TCMs are much expensive than WMs…" (K2, TCM physician)

"…Some patients do not want to use TCMs because of their high price and bad tastes…" (K1, TCM physician)

Theme 3: influenced by patient

a. Patient demand

All of physicians informed that a small number of patients requested WMs or TCMs based on their understanding or preferences, which would influence the prescribing of physicians.

"…It is not much...Some patients do not want to use TCMs because their high price and bad tastes. Some do not want to use WMs with the concern on adverse effects…" (K1, TCM physician)

b. Patients' conditions

Two TCM physicians mentioned that TCMs could be used in the early stage of diabetes; all of TCM and most of WM physicians agreed that TCMs could control complications or symptoms of T2D.

"…In recent years, I found out a new trend that some special cases or patients at an early stage can be treated with TCMs only, while their blood glucose can also be controlled very well. Some cases even showed the better blood glucose control when taking only TCMs. When patients stop taking WMs, their blood glucose will generally sharply increase…" (K2, TCM physician)

All of above results from the interviews showed that physicians' prescribing preferences were influenced by 3 major factors, including physicians, drugs and patients. These factors included physicians' attitudes,

Table 2. Prescriptions for treating T2D classified by types of medications and physicians (N=412)

type of medications	WM physicians		TCM physicians		Total	
	n	%	n	%	n	%
WMs	172	98.29	207	87.34	379	91.99
TCMs	0	0.00	8	3.38	8	1.94
WMs & TCMs	3	1.71	22	9.28	25	6.07
total	175	100.00	237	100.00	412	100.00

WM = western medicine, TCM = traditional Chinese medicine; P<0.001 with chi-square test

education background and experiences, the efficacy, characteristics and cost of drugs, patient demand and conditions of the patients. According to the preferences, all physicians generally considered WMs as the first-line medication in treating diabetes because their quick and potent effects in controlling the blood glucose. Most physician had positive attitudes towards TCMs, and agreed that TCMs were effective in relieving the diabetes symptoms and preventing complications. The disadvantages of TCMs concerned by physicians were delayed effect, insufficient hypoglycemic effect, high cost, high dosage, inconvenience to use. To physicians, adequate training and good experiences in TCM were important for prescribing TCMs.

Prescribing patterns

A total of 412 prescriptions in the study was issued during February 2019. Their information was shown in Table 2. Fourteen WMs and 5 TCMs were involved in the study (Table 3). Acarbose and metformin were the most frequently prescribed WMs by both WM and TCM physicians (acarbose; WMD 71.43%, TCMD 62.03%, metformin; WMD 42.86%, TCMD 53.16%). TCMs were general commercial products included Xiaoke capsule, Tangmaikang granule, Ruoguihuatang tablet, Tangwei capsule, Bailing capsule, and the TCMs formulated by physicians depending on the patients' symptoms.

Four hundred and four (98.06%) prescriptions included WMs, and 33 (9.01%) of them included TCMs. Most of the time, WMs were used solely (n=379, 91.99%), while only 8 (1.94%) prescription used TCMs solely. There were the combinations of TCMs and WMs in 25 prescriptions. Up to 98.29% of prescriptions from WM physicians used WMs solely, higher than that (87.34%) from TCM physicians. None of WM physicians prescribed only TCMs in a prescription. The patients with the use of TCMs solely had an average age of 59.13 (SD=10.02), and the duration of diabetes of 1.69 years (SD=0.96), indicating they were in an early stage of diabetes. The results of prescription analysis were consistent with those of the interview with physicians.

Discussion

Using TCMs to treat or prevent diseases has long history and is still prevalent in China. Different to WMs, TCM diagnosis and prescription should be followed the unique TCM theories, which considered human body as an entirety and aimed to restore normal body functions (12). The controversies over advantages and disadvantages of both treatments were long-standing. Taking advantages from each side was the wise choice. Compared to TCMs, it was no doubt that WMs were more preferable to physicians' prescribing for diabetes for their quick and potent effect on controlling blood glucose. From the results of this study, prescriptions with TCMs were 8.01%, even less than the previous report of 11.9% (13). In the Chinese Diabetes Prevention Guideline, metformin was suggested as the first choice, and TCM products suggested to be used in the combined therapy for relieving symptoms or

preventing complications (5). Although policy to raise the status of TCMs has been issued by the Chinese government, more efforts were required to pave the way for the TCMs. To suggest the measure for a better use of WMs and TCMs, it was necessary to understand the reasons behind the prescribing preference and pattern.

The physicians played a major role in writing prescription. In this study, most of them showed positive attitudes towards TCMs. Even WMs physicians agreed that TCMs were effective in relieving the symptoms and preventing complications of diabetes, showing their potentials to improve diabetes treatment. The reasons why WMs were the first choice in treatment, next to the efficacy of medication was the capacity of the physicians in dealing with TCMs. TCM treatment was individualized depending on the patients' conditions with no standard protocols. After graduated from TCM schools, physicians still need to accumulate knowledge through practice for decades before they become experienced and able to point out the problem precisely and provide a comprehensive prescription. From the

Table 3. Medications in the prescriptions for treating T2D classified by types of physicians (N=412).

medication	types of physicians					
	TCM (n=237)		WM (n=175)		total (N=412)	
	n	%	n	%	n	%
WM						
acarbose	147	62.03	125	71.43	272	66.02
metformin	126	53.16	75	42.86	201	51.21
gliclazide	43	18.14	49	28.00	92	22.23
pioglitazone	32	13.50	23	13.14	55	13.35
glimepiride	13	5.49	18	10.29	31	7.52
voglibose	11	4.64	4	2.29	15	3.64
repaglinide	7	2.95	8	4.57	15	3.64
miglitol	8	3.38	0	0.00	8	1.94
glipizide	1	0.42	6	3.43	8	1.70
rosiglitazone	1	0.42	5	2.86	6	1. 46
glibenclamide	0	0.00	1	0.57	1	0.24
gliquidone	1	0.42	0	0.00	1	0.24
dapagliflozin	1	0.42	0	0.00	1	0.24
saxagliptin	1	0.42	0	0.00	1	0.24
TCM						
Xiaoke capsule	3	1.27	1	0.57	4	0.97
Tangmaikang granule	2	0.84	1	0.57	3	0.73
Bailing capsule	2	0.84	0	0.00	2	0.49
Tangwei capsule	0	0.00	1	0.57	1	0.24
Ruoguihuatang tablet	1	0.42	0	0.00	1	0.24
TCM formula	23	9.70	0	0.00	23	5.58

WM = western medicine, TCM = traditional Chinese medicine

previous studies, education increased knowledge, however it did not improve practice immediately (14). In the current study, physicians also expressed the importance of the experience in TCM prescribing. To improve the performance of TCM in treating the diabetes, the constructive suggestion is to increase postgraduate practice training to TCM physicians. The TCM administration, hospitals and TCM education institution should consider setting up the related training curriculum for TCM practice. The defects of TCM products or formulas were generally mentioned in the study, including slow and insufficient effect, high doses, bad tastes, and high cost. According to these, it was reasonable to develop the more purified, concentrated and potent TCM products for diabetes by using new technologies. However the modernization of TCMs was not a simple process. Whether the “major compounds” or “effective compounds” worked as original TCM materials was disputable, since the chemicals compositions were complex in TCM materials. In addition, in the TCM formulas, the chemicals within materials had synergetic effects, the physicians would adjust the ratio of the materials depending on the patient’s conditions. A fixed-formula of TCMs would limit the effectiveness. Taking into consideration, the preparation of the extract from each material to replace TCM materials might be the current resolution, and some pharmaceutical companies in China had started the projects. By this way, physicians could individualize prescription for patients with more concentrated and quality controlled TCMs.

In patient factor, patient’s requirement and situation may influenced physician’ decision making of prescription. Similar results were revealed in Venkataraman Sriam’s and Rees Sophie’s publications (15, 16). In this paper, many doctors expressed that the patient’s wish and preference may impact their decision making. All the physicians said few patients required them to prescribing TCM. For TCM physicians, they considered that TCM can be used in early stage and mild T2D cases, and TCM was good at relieving symptoms and reducing complication of T2D. Their experience may help them according to patients’ situation to select the medication in their treatment.

This study explored the influencing factors of endocrinologists’ prescribing patterns with TCMs or WMs on T2D patients. However, TCM & WM physicians were not included in this study because of the following reasons. Law on Practicing Doctors of the People's Republic of China came into effect in 1999. It establishes the standards of practicing physician and regulates the rights of licensed physicians in China. The Law stipulates that TCM & WM physicians can only work in the Department of traditional Chinese medicine and the Department of integrative Chinese and Western medicine in hospitals. The most general hospitals are unwilling to accept TCM & WM physicians in order to avoid violating the law. Therefore, TCM & WM physicians are confronted with dilemma in their practice. Likewise, it has an adverse impact on education of TCM & WM physicians, which is one of reasons why the program on integrated TCM and WM has been cancelled by many medical universities (17). In addition, the study was conducted in the Endocrine Department of an integrated Traditional Chinese and Western Medicine general hospital. This hospital advocates TCM & WM treatment with diseases. However, there are no TCM & WM physicians working in the clinic.

Conclusion

WMs were used as the first-line diabetes treatment, while TCMs were used in relieving the diabetes symptoms and preventing the complications. The prescribing preferences were affected by the attitudes towards TCMs, education background and experiences of physicians, characteristic of drugs, and patients’ conditions. To support the use of TCMs in treating diabetes, improvement in the experiences of physicians with TCMs and development of more effective products were required.

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