A SURVEY OF THE UTILIZATION OF DIABETES RISK ASSESSMENT TOOL (AUSDRISK) IN DISEASE MANAGEMENT: A PILOT STUDY IN AUSTRALIA.

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Abstract

Non-invasive diabetes risk assessment tools are available in many countries. The Australian diabetes risk assessment tool (AUSDRISK) is one such tool developed in Australia.

This study aimed to assess pharmacists' awareness and perception of AUSDRISK and their attitudes towards using this tool for risk assessment service in a community pharmacy.

A self-administered survey targeted 2000 pharmacist members of the Pharmaceutical Society of Australia in Victoria and Queensland from October 2011 to January 2012. Descriptive statistics and multiple regression analyses were used to analyse participants' responses. The total responses numbered 114, representing a 5.7% overall response rate. Only 9.8% of the respondents who were aware of AUSDRISK had a correct understanding about AUSDRISK. Over 50% of all respondents agreed that AUSDRISK is easy to understand, can be used as a primary screening tool and should be applied in community pharmacies for a type 2 diabetes risk assessment program. The shortage of pharmacists' times (85%), lack of awareness of the risk assessment program (80.5%) and no extra remuneration (76.8%) were identified as the major barriers for diabetes risk assessment implementation. In addition, a sum between AUD10 and AUD50 was suggested as the required remuneration rate for a community pharmacy to provide this service. In conclusion, Australian pharmacists agreed that AUSDRISK can be used for diabetes risk assessment in a community pharmacy. This finding would provide preliminary evidence to initiate risk assessment for diabetes management at the community pharmacy.

Keywords: Type 2 Diabetes, Community pharmacy, Disease management, risk assessment tool, Australia, AUSDRISK

Better managing of type 2 diabetes has become a major health priority in many countries due to an increasing prevalence of this disease worldwide.[1] Several studies have shown that early detection or a preventive program for type 2 diabetes can reduce diabetes complications and can be cost effective.[2,3] Hence, a number of diabetes risk assessment tools were developed in several countries to identify a person at risk of developing type 2 diabetes to allow earlier intervention.[4,5]

In 2008, the Australian Commonwealth Department of Health and Ageing developed an Australian type 2 Diabetes Risk assessment tool (AUSDRISK) to estimate the probability of a person developing type 2 diabetes within the next 5-years based on several risk factors, namely: age, gender, country of birth, family history of diabetes, history of high blood glucose, hypertension, smoking status, fruit and vegetable intake, physical activity level and waist circumference.[6] AUSDRISK has been promoted among general practitioners (GPs) to be used as a tool to screen patients aged 25-74 years not previously diagnosed as diabetics. However, two years after the launch of the AUSDRISK, the application rate of AUSDRISK among general practitioners (GPs) is low as reported by a recently published study.[7]

This raises the question of whether community pharmacists being considered as the most accessible health professionals can play a pivotal role in providing diabetes risk assessment. In fact, several studies have reported that screening for diabetes in community pharmacy is effective.[8,9] According to the fifth community pharmacy agreement, a range of disease management programs would be implemented in community pharmacy to ensure patients would receive the highest quality of care and improve health outcomes of Australians[10] Hence, it would be highly desirable to explore whether the AUSDRISK can be integrated with other interventions for diabetes management at the community pharmacy. Up to date, there is little information on awareness of AUSDRISK among community pharmacists in Australia. The objectives of this study were to (i) determine awareness and perception of AUSDRISK among community pharmacy in Australia and (ii) to determine their attitudes of implementation of AUSDRISK for diabetes risk assessment program in community pharmacy. Together, these would provide some information for developing continuation of care model for diabetes management at the community pharmacy level.

Method

Study design, setting and participants

A self-administered cross-sectional survey was used to collect data from community pharmacists in Australia from 7th

October 2011 to 31st January 2012. The minimum estimated sample size was 400 participants for a statistical power of 0.80 at an alpha level of 0.05. Targeting for 20% response rate, the questionnaire was sent to 2,000 members of Pharmaceutical Society Australia (PSA) in Victoria and Queensland. The study was approved by the Human Research Ethics Committee, University of Newcastle, and the survey approval program of the Pharmacy Guild of Australia.

Instrument and Data collection

By Delphi process, a self-administered questionnaire consisted of 5 sections ((i) General information about pharmaceutical care services, (ii) knowledge about AUSDRISK, (iii) pharmacists' perception of AUSDRISK, (iv) barrier of diabetes risk assessment implementation, (v) demographic) was developed. A five-point Likert-type scale was applied for the response of perception questions. Response set bias was avoided by intermixing negatively and positively worded statement. Closed-end questions were used for the other parts of the questionnaire. An explanatory letter for the study and a copy of AUSDRISK were attached with this survey. The respondents were allowed to return the completed questionnaire by provided prepaid envelop by January 2012. A follow-up mail was sent a month after the initial questionnaire as a reminder to improve the response rate.

Data analysis

Cronbach's ∝ statistic was used to test the reliability of the questionnaire. Frequencies and percentages of responses were generated for each question. If responses were continuous and numerical, descriptive statistics were generated. Multiple regression analysis was used to evaluate the relationship of pharmacists' characteristics and perception of diabetes risk assessment by AUSDRISK. A test of multicollinearity and autocorrelation were conducted on the independent variables. The variables entered into the model included participants' gender, age, employment status, and years of working experience in community pharmacy. All statistical analyses were performed using IBM SPSS statistic v.19 and the level of significance for all tests was set at 0.05.

Results

The total responses numbered 114, representing a 5.7% overall response rate were received. The scale measuring perception of AUSDRISK was found reliable with Cronbach's coefficient alpha of 0.75. The characteristics of respondents are presented in Table 1.

Table 1 Demographic characteristics of respondents (N=114) and registered pharmacists in Australia.

Characteristic	Percentage (%)			
	Early Respondents (N=71)	Late respondents (N=43)	Total respondents (N=114)	Total registered pharmacists (N=23,923)
Age				
21-30	48.0	49.0	48.2	33.9
31-40	17.0	16.0	16.7	25.9
41-50	20.0	9.0	15.8	15.9
51-60	14.0	12.0	13.2	13.2
>60	1.0	14.0	6.1	10.9
Gender				
Male	24.0	40.0	29.8	42.6
Female	76.0	60.0	70.2	57.4
Employment status				
Owner+manager	18.6	7.0	14.2	Data not available
Full time manager	14.3	11.6	13.3	‘’
Part-time manager	1.4	4.7	2.7	‘’
Full-time pharmacist	34.3	39.5	36.3	‘’
Part-time/casual pharmacist	27.1	34.9	30.1	‘’
Other	4.3	2.3	3.5	‘’
Working experience (years)				
0-5	26.1	30.2	27.7	Data not available
>5-10	29.0	30.2	29.5	‘’
>10-15	13.0	7.0	10.7	‘’
>15	31.9	32.6	32.1	‘’
Pharmacy setting				
Branded pharmacy	58.0	60.5	59.5	Data not available
Independent pharmacy	42.0	39.5	40.5	‘’

Table 1 Demographic characteristics of respondents (N=114) and registered pharmacists in Australia. (continue)

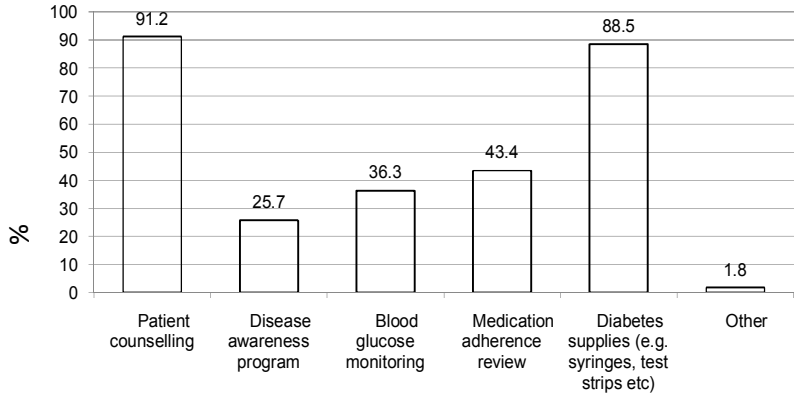
Characteristic	Percentage (%)			
	Early Respondents (N=71)	Late respondents (N=43)	Total respondents (N=114)	Total registered pharmacists (N=23,923)
Disease management*				
Hypertension management	70.0	60.5	66.4	Data not available
Asthma management	24.3	20.9	23.0	‘’
Diabetes management	65.7	46.5	58.4	‘’
Hyperlipidaemia management	20.0	11.6	16.8	‘’
Osteoporosis management	7.1	2.3	5.3	‘’
Smoking cessation	52.9	44.2	49.6	‘’
Weight management	65.7	34.9	54.0	‘’
Other	5.7	0	3.5	‘’
Interest in providing risk assessment service				
Yes	88.7	76.7	84.2	Data not available
No	1.4	2.3	1.8	‘’
Unsure	9.9	20.9	14.0	‘’

*More than one disease management program provided per pharmacy

The main types of pharmaceutical care services offered in the pharmacy were hypertension management (66%), diabetes management (58%) and weight management (54%). Most respondents (84%) were interested in and positively disposed to provide risk assessment services for chronic diseases in their community pharmacy.

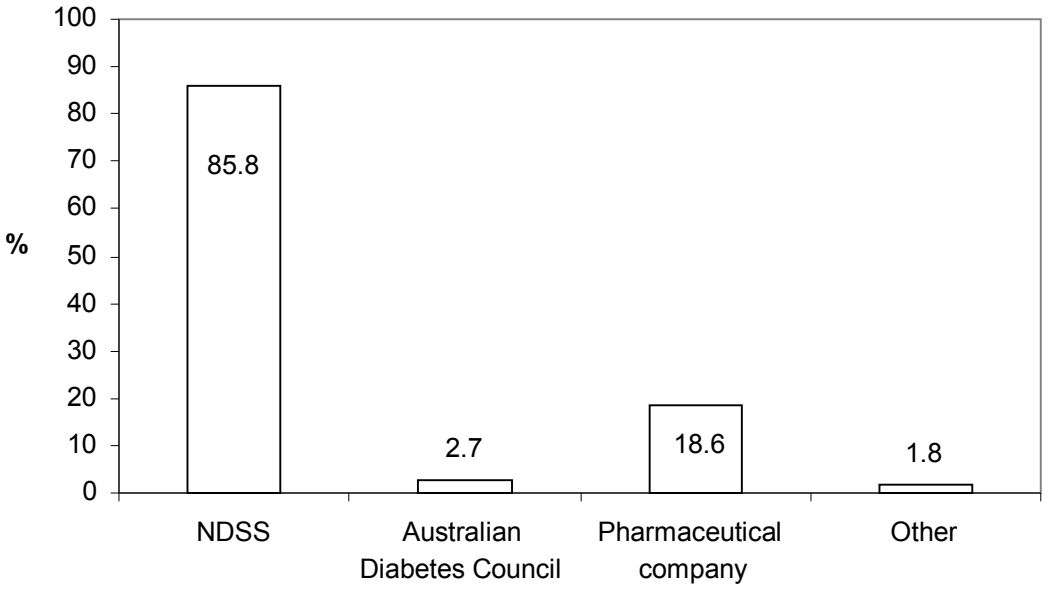
A summary of diabetes care services offered in community pharmacy is provided in Figure 1. The major activities included patient counselling (91%) and diabetes supplies (88.5%). Approximately 86% of the responded pharmacists were supported by the National Diabetes Service Scheme (NDSS) for the diabetes care service in the pharmacy (Figure 2). Additionally, most of the pharmacists (97%) believed diabetes care service is a part of community pharmacist’s responsibility.

Figure 1: Diabetes care services offered in community pharmacy



*Other = devices check and clean

Figure 2. Support organization for diabetes care services in community pharmacy



*Others = Banner group, Diabetes Queensland Guild, NDSS=National Diabetes Service Scheme

Before this survey was conducted, about 45% of respondents were aware of AUSDRISK. Eighty-four percent of respondents knew that AUSDRISK is a questionnaire for type 2 diabetes risk assessment and 76.5% knew that it is a tool to predict the risk of developing type 2 diabetes in the next 5 year. However, only 10% provided the correct answers for all 5 questions about the knowledge of AUSDRISK. Approximately 47% of respondents strongly agreed that AUSDRISK is easy to understand and 64% agreed that this tool should be applied in

community pharmacy for type 2 diabetes prevention program (Table 2).

The perceived barriers from the responded pharmacists highlighted the shortage of pharmacists' times (85%), lack of awareness of risk assessment program (81%) and no extra remuneration (77%) as the major barriers for implementation of diabetes risk assessment in community pharmacy (Table 2).

Table 2 Pharmacists' Perception about AUSDRISK and Perceived barriers for implementation of diabetes risk assessment service in community pharmacy (N=114)

Perception	Pharmacists (%)				
	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1. I feel AUSDRISK is easy to understand	0.9	0	12.6	39.6	46.8
2. I feel AUSDRISK can be used as a primary diabetes screening tool for further diagnosis by GPs	1.8	0	12.6	55	30.6
3. I feel AUSDRISK is not an effective risk assessment tool for type 2 diabetes	16.2	61.3	20.7	0.9	0.9
4. I think AUSDRISK should be applied in pharmacy for type 2 diabetes prevention program	0	0	16.2	64	19.8
5. I think AUSDRISK is not useful for community pharmacy services.	27	56.8	12.6	2.7	0.9

Table 2: Pharmacists' Perception about AUSDRISK and Perceived barriers for implementation of diabetes risk assessment service in community pharmacy (N=114) (continue)

Barriers	Pharmacists (%)				
	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1. Pharmacists do not have enough knowledge/skills of diabetes care	21.1	46.5	11.4	21.1	0
2. Shortage of qualified staff	2.6	18.4	9.6	58.8	10.5
3. No extra remuneration	2.7	4.5	16.1	54.5	22.3
4. Shortage of time for pharmacist	0.9	11.4	2.6	48.2	36.8
5. No existing effective patient transferring system to GPs	0.9	15.8	10.5	51.8	21.1
6. Will conflict the relation with GPs	8	47.8	30.1	10.6	3.5
7. Customers are not interested in this service	7.9	54.4	26.3	9.6	1.8
8. Lack of government support	1.8	5.3	25.7	46.9	20.4
9. No standard guideline for this type of service in community pharmacy	1.8	13.2	12.3	64.0	8.8
10. Lack of awareness of risk assessment program	0	8	11.5	64.6	15.9

Before conducting the multiple regression analyses, a test of multicollinearity and autocorrelation were conducted on the independent variables. The variables entered into the model included participants' sex, age, employment status, and number of working years experience in community pharmacy. The result showed no multicollinearity and no autocorrelation within variables (Value of reciprocal of tolerance (VIF) <10 and d_U < d value < 4-d_U respectively). Result from multiple regression analysis presented in Table 3. The 5 variables did not have a very strong relation with perception scores which was explained by coefficient of determinant valued (R^2) = 0.11. Only age was identified as a significant predictor (p=0.021) with the younger participants having higher perception scores for AUSDRISK than older participants (β = - 0.425).

Table 3 Predictors of perception in diabetes risk assessment tool (AUSDRISK)

Constant/variables	B	B(SE)	β	t	p-value
Sex	0.157	0.119	0.134	1.314	0.192
Age	-0.176	0.075	-0.425	-2.346	0.021
Employment	0.026	0.038	-0.072	-0.678	0.499
Working	0.129	0.081	0.287	1.583	0.116
Setting	0.087	0.103	0.080	0.843	0.401
Constant 3.824 ; SE_{est} = 0.518					
R = 0.333; R^2 = 0.111; F = 2.487; p-value = 0.036					

Moreover, a minimum of $10 and a maximum of $50 were proposed as the most appropriate remuneration rates for the pharmacists to provide risk assessment service in community pharmacy.

Discussion

To our knowledge, this was the first study exploring pharmacists' awareness, perception and attitude regarding an implementation of AUSDRISK for diabetes risk assessment in community pharmacy. Our study results indicated that the surveyed community pharmacists have low awareness about AUSDRISK before this survey was conducted. Despite of this, more than half of surveyed pharmacist agreed or strongly agreed that AUSDRISK is easy to understand and should be used as a diabetes risk assessment tool in community pharmacy. Furthermore, most of surveyed pharmacists were willing to provide diabetes risk assessment service in their community pharmacy.

Barriers to apply AUSDRISK for risk assessment service in community pharmacy such as staff shortage, lack of time and no extra remuneration were consistent with previous studies about barriers in providing enhanced pharmacy services in community pharmacy.[11,12] In addition, similar to the result from a previous study that only 23% of GPs were aware of AUSDRISK and only 14% reported using AUSDRISK in their practice.[7] Our study showed that less than half of the responded pharmacists knew about the AUSDRISK. These findings reflect the low level of awareness of the availability of such tool. Health promotion planner should first and foremost spend more efforts to increase awareness of this tool, before deciding whether it is feasible to support the community pharmacists who are willing to commence this service.

Another interesting finding of our study was the ascertainment of the quantum of financial reimbursement that the pharmacist considered to be adequate to provide the service. The expected remuneration rate of between AUD 10 to AUD 50 per service to provide diabetes risk assessment service was rather modest and comparable to the level of co-payment for a prescription (currently ~ AUD35 maximum) under the Pharmaceutical Benefits Scheme in Australia. This really shows the keenness and willingness of the community pharmacists to expand their role in patient care. Thus, it would be worthwhile for the government to consider seriously to integrating risk assessment service with diabetes management and reimburse the community pharmacists accordingly.

In fact, the continuum of care for diabetes, covering identification of people at risk, detection and prevention, management and related services, etc. has been outlined in *Preventing Chronic Disease: A Strategic Framework* 2001[13]. However, results from our present study showed that the focus of services provided by community pharmacists in Australia for diabetes still centered on patient counselling and diabetes supplies rather than prevention functions even after decades of claiming to adopt pharmaceutical care. This certainly is something for the pharmacists in Australia and beyond to ponder about.

Nevertheless, several limitations should be taken into consideration when interpreting the results from our study. While this research attempted to study all community pharmacists in Australia, due to resource constraints, only community pharmacists in Victoria and Queensland were surveyed. Our sample size of 114 also does not provide enough statistical power. The low response rate may be caused by the period of data collection which was conduct during the busy time of the year for community pharmacy. Another possible reason would be the unwillingness of the pharmacists who did not have knowledge of the assessment tool to respond. Future study administered at educational events for pharmacists or using incentives to improve survey response would be needed to confirm the trends observed in our study. In addition, study variables were assessed by self-report, which may be biased by an inclination to provide social desirable responses and extremity (tendency to use extreme ratings).

Furthermore, since only community pharmacists in the state of Victoria and Queensland were surveyed, the generalizability of the results to the rest of the country might be somewhat affected. Future studies, at the very least to survey a sample of community pharmacists in other states should be attempted to confirm the trend of our current findings.

Conclusion

The findings from this survey would provide preliminary evidence to support the feasibility of implementing AUSDRISK to extend community pharmacists beyond their current role in diabetes management into risk assessment. However, further attempt to gain higher responses from the pharmacists should be performed to allow robust evidence and reliable information in the future study. If risk assessment intervention was successfully implemented, it would most likely turn out to be a cost-effective strategy that contributes significantly to chronic disease management in the pharmacy practice.

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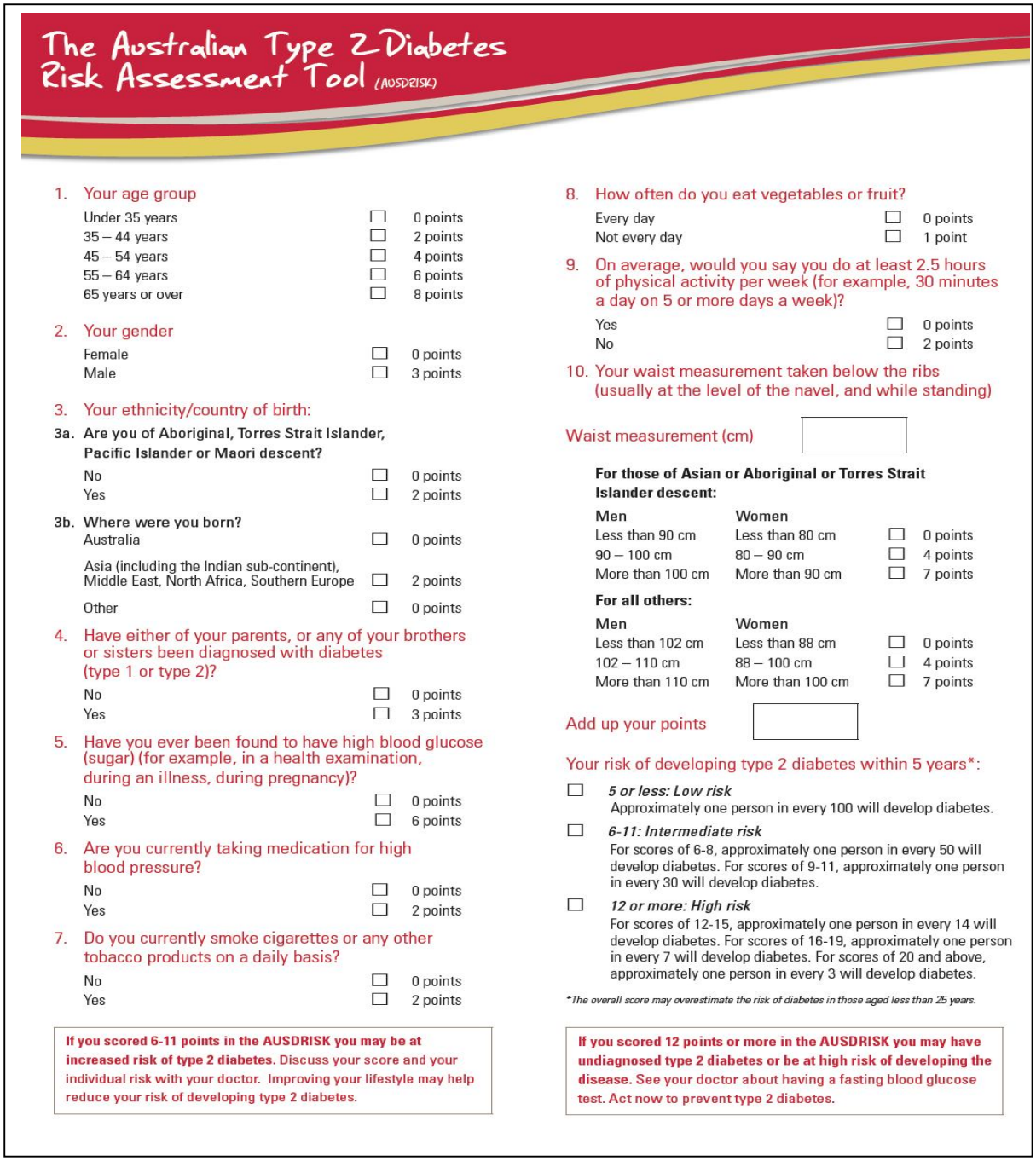
Conflict of Interest None

Appendix I: Australia Diabetes Risk Assessment Tool (AUSDRISK)



The Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK)

1. Your age group

Under 35 years	☐	0 points
35 – 44 years	☐	2 points
45 – 54 years	☐	4 points
55 – 64 years	☐	6 points
65 years or over	☐	8 points

2. Your gender

Female	☐	0 points
Male	☐	3 points

3. Your ethnicity/country of birth:

3a. Are you of Aboriginal, Torres Strait Islander, Pacific Islander or Maori descent?

No	☐	0 points
Yes	☐	2 points

3b. Where were you born?

Australia	☐	0 points
Asia (including the Indian sub-continent), Middle East, North Africa, Southern Europe	☐	2 points
Other	☐	0 points

4. Have either of your parents, or any of your brothers or sisters been diagnosed with diabetes (type 1 or type 2)?

No	☐	0 points
Yes	☐	3 points

5. Have you ever been found to have high blood glucose (sugar) (for example, in a health examination, during an illness, during pregnancy)?

No	☐	0 points
Yes	☐	6 points

6. Are you currently taking medication for high blood pressure?

No	☐	0 points
Yes	☐	2 points

7. Do you currently smoke cigarettes or any other tobacco products on a daily basis?

No	☐	0 points
Yes	☐	2 points

If you scored 6-11 points in the AUSDRISK you may be at increased risk of type 2 diabetes. Discuss your score and your individual risk with your doctor. Improving your lifestyle may help reduce your risk of developing type 2 diabetes.

8. How often do you eat vegetables or fruit?

Every day	☐	0 points
Not every day	☐	1 point

9. On average, would you say you do at least 2.5 hours of physical activity per week (for example, 30 minutes a day on 5 or more days a week)?

Yes	☐	0 points
No	☐	2 points

10. Your waist measurement taken below the ribs (usually at the level of the navel, and while standing)

Waist measurement (cm) ☐

For those of Asian or Aboriginal or Torres Strait Islander descent:

Men	Women		
Less than 90 cm	Less than 80 cm	☐	0 points
90 – 100 cm	80 – 90 cm	☐	4 points
More than 100 cm	More than 90 cm	☐	7 points

For all others:

Men	Women		
Less than 102 cm	Less than 88 cm	☐	0 points
102 – 110 cm	88 – 100 cm	☐	4 points
More than 110 cm	More than 100 cm	☐	7 points

Add up your points ☐

Your risk of developing type 2 diabetes within 5 years*:

☐ ***5 or less: Low risk***
Approximately one person in every 100 will develop diabetes.

☐ ***6-11: Intermediate risk***
For scores of 6-8, approximately one person in every 50 will develop diabetes. For scores of 9-11, approximately one person in every 30 will develop diabetes.

☐ ***12 or more: High risk***
For scores of 12-15, approximately one person in every 14 will develop diabetes. For scores of 16-19, approximately one person in every 7 will develop diabetes. For scores of 20 and above, approximately one person in every 3 will develop diabetes.

**The overall score may overestimate the risk of diabetes in those aged less than 25 years.*

If you scored 12 points or more in the AUSDRISK you may have undiagnosed type 2 diabetes or be at high risk of developing the disease. See your doctor about having a fasting blood glucose test. Act now to prevent type 2 diabetes.

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