



معهد دسمان للسكري  
Dasman Diabetes Institute



أحد مراكز  
Center

مؤسسة الكويت للتقدم العلمي  
Kuwait Foundation for the Advancement of Sciences



ANNUAL | 2023  
REPORT



**H.H. Sheikh Meshal Al-Ahmad Al-Jaber Al-Sabah**  
Amir of the State of Kuwait



**H.H. Sheikh Sabah Khaled Al-Hamad Al-Sabah**  
Crown Prince of the State of Kuwait



**H.H. Sheikh Ahmad Abdallah Al-Ahmad Al-Sabah**  
Prime Minister of the State of Kuwait

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# DG OPENING MESSAGE



**DR. FAISAL HAMED AL-REFAEI**

It is our privilege to share the 2023 Dasman Diabetes Institute (DDI) Annual Report, highlighting the Institute's research, medical, operational, and public awareness initiatives.

Over the years, DDI, which was founded by the Kuwait Foundation for the Advancement of Sciences (KFAS), has gone through a remarkable journey to become what it is today – a world-renowned institute, focused on a clear mission with an ambitious vision.

In 2023, the Institute retained its certifications, awards, and accreditations insuring the delivery of high-quality services to its patients and visitors. DDI maintained the International Diabetes Federation (IDF) Centre of Excellence Award recognizing the Institute's efforts and contributions to diabetes education. The Royal College of Surgeons of England renewed DDI's certification to deliver the Basic Surgical Skills course at its facility.

DDI was honored with the '15 Years of Excellence' award from Accreditation Canada, a testament to the Institute's commitment to enhancing services, delivering high-quality care, and prioritizing patient well-being. Additionally, the Institute's adherence to safeguarding patient health information has been verified in accordance with the Health Insurance Portability and Accountability Act (HIPAA).

In efforts to reduce the incidence of diabetes and further benefit the health of the Kuwaiti population, DDI adopted a translational research model. The Institute has 63 ongoing research projects from all its sectors dedicated to the development of

innovative health services and interventions. In 2023, DDI published 105 research articles with 55 being original research publications. To date, DDI has also been granted 5 patents, with 3 patents still ongoing.

Our teams attract talent from all over the world and their collaborations continue to expand DDI's national, regional, and international network. The Institute maintained and attained 2 national collaborations, 3 regional collaborations, and 14 international collaborations.

DDI's commitment to the education and engagement of the public has led to their involvement and support of the Institute's initiatives. DDI also provided accredited training and development opportunities for 2,163 professionals. Diabetes education sessions were offered to 5,277 patients to ensure maximal clinical improvements.

DDI's initiatives aim to raise awareness on diabetes management, treatment, and prevention, while promoting a healthier lifestyle to maintain overall quality of life. In 2023, DDI's public engagements included 92 activities (internal and external), 105 videos and 453 posts on social media promoting health awareness. The Institute also aims to provide easy and accessible resources to the public, with 10 electronic booklets shared and 45 webinars/virtual group sessions held in 2023.

In conclusion and on behalf of the employees at the Dasman Diabetes Institute, I can only express my heartfelt appreciation and gratitude to His Highness Sheikh Mishal Al-Ahmad Al-Jaber Al-Sabah, the Amir of Kuwait, may God bless him and protect him, and to His Highness Sheikh Sabah Al-Khaled Al-Hamad Al-Mubarak Al-Sabah, the Crown Prince, and to His Highness Sheikh Ahmad Al-Abdullah Al-Ahmad Al-Sabah, the Prime Minister, may God bless them, beseeching God Almighty to grant them success in moving our beloved country forward on the paths of progress and prosperity.

In the following pages, it is my pleasure to share a synopsis of our 2023 Achievements.

**Dr. Faisal Hamed Al-Refaei**  
Acting Director General  
Dasman Diabetes Institute

# KEY ACHIEVEMENTS



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## DDI Prize Awards

### International Diabetes Federation (IDF) Center of Excellence

In 2023, the International Diabetes Federation (IDF) - an umbrella organization of over 230 national diabetes associations in more than 160 countries and territories - renewed DDI's status as an 'IDF Centre of Excellence' in diabetes care.



### Basic Surgical Skills Certification



DDI was able to maintain the certification by the Royal College of Surgeons of England to deliver Basic Surgical Skills (BSS) until June 2025. This course introduces surgical trainees to safe surgical practice within a controlled workshop environment and aims to “teach, assess and certify” the ability of trainees to use safe and sound surgical techniques that are common to all forms of surgery.



This is to certify that  
**Dasman Diabetes Institute**  
is approved to deliver

**Basic Surgical Skills (BSS)**

on behalf of

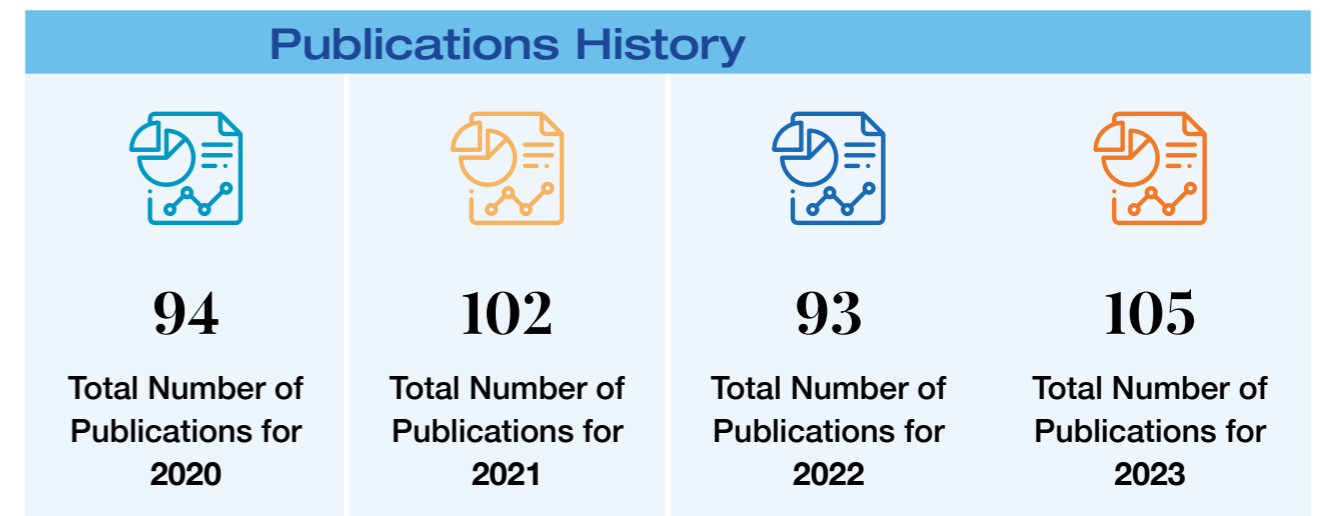
**The Royal College of Surgeons of England**

between  
October 2022 - June 2025

**Professor Neil Mortensen**  
President, The Royal College of Surgeons of  
England  
Registered Charity No. 212808

## College of American Pathologists Accreditation

The College of American Pathologists (CAP) Laboratory Accreditation Program is an internationally recognized program that has helped the Clinical Laboratory at DDI achieve the highest standards of excellence. The CAP Program's main goal is to improve patient safety by ensuring precision and accuracy in patient results.



## HIPAA Compliance

The IT Department has successfully renewed its HIPAA compliance for 2023-2024. HIPAA helps ensure the confidentiality of patient data by assessing DDI's processes for managing, storing, and sharing of patient information.



## Received '15 Years of Excellence' recognition award



## Research Participation History



**1,190**

Total Number of Participants in 2020



**2,007**

Total Number of Participants in 2021



**2,051**

Total Number of Participants in 2022



**2,013**

Total Number of Participants in 2023

## 2023 DDI Activities



**92**

Activities



**40**

Awareness Information



**51**

Press Releases



**105**

Health Awareness Videos



**202**

Public Awareness Posts



**251**

Awareness Tweets

## 2023 Clinical Improvements



**60%**

T1DM patients achieving HbA1c levels of < 8 mmol/l



**>5,200**

Patients seen for one-to-one diabetes education



**3,713**

Investigations provided in the DIC



**4,525**

Patients were seen across DDI clinics



**389**

Clinical Skills Courses held with 1,654 students



**366**

HCPs\* trained on retinal screening, foot screening, and diabetes education

# RESEARCH SECTOR



## Key Highlights of 2023



**90**  
Total number of  
Publications



**49%**  
Original Research  
Articles (44 out of 90)



**38%**  
increase in Research  
Sector Publications  
compared to 2022



Establishment of a new department  
Translational Research



**5.15**  
Median Impact Factor  
of Total Publications  
in 2023



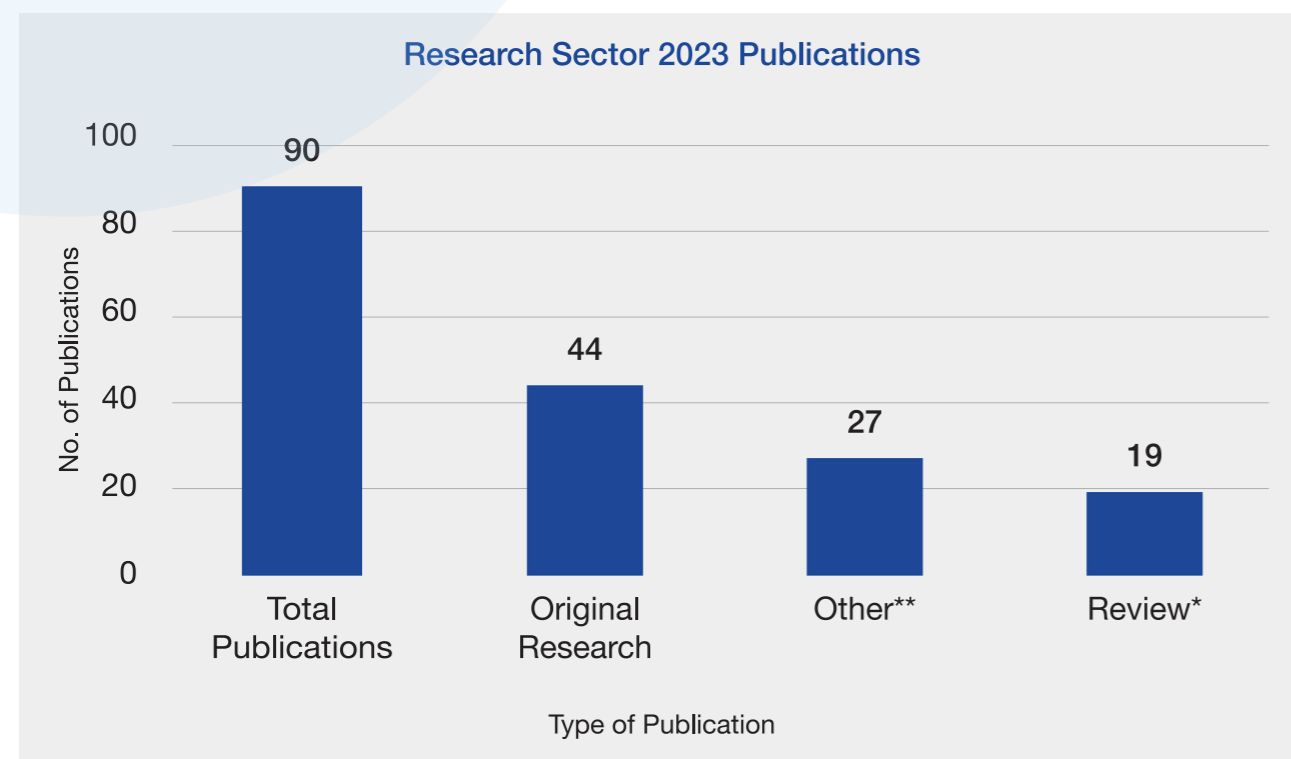
**5.00**  
Median Impact Factor  
of Original Research  
Articles in 2023

## PUBLICATIONS

### Quantity

In 2023, a total of 90 articles were published, of which 44 (49%) were original research articles.

Figure 1. Number and type of Research Sector publications in 2023.



\* Reviews include Reviews, Editorials, Comments, Letters to the Editor, Short Communications.

\*\* Others refers to collaborative papers and publications where DDI staff are co-authors, but none of the actual research was done within DDI (excluding data sharing).

### Quality

#### Impact Factor

The median Impact Factor (IF) of 2023 was 5.15 for total publications and 5.00 for original research articles. As for manuscripts published in key journals, i.e., journals with an IF  $\geq 5$ , 50% of the total articles were published in key journals (Table 1).

Table 1. Median IF of total publications and publications in key journals, i.e., journals with an IF of  $\geq 5$  in 2023.

|                               | 2023 |
|-------------------------------|------|
| Total Publications            | 90   |
| Median IF                     | 5.15 |
| % Key journals (IF $\geq 5$ ) | 50%  |

Abbreviations: IF, impact factor.

In 2023, the Research Sector produced manuscripts that were published in esteemed journals, such as *Nature Medicine* (IF, 82.9), *Nature* (IF, 64.8), and *Circulation* (IF, 37.8; Table 2).

Table 2. List of key journals (IF  $\geq 5$ ) publications from the Research Sector in 2023.

|    | Journal Name                                | IF   | Number of Publications |
|----|---|------|------------------------|
| 1  | Nature Medicine                             | 82.9 | 1                      |
| 2  | Nature                                      | 64.8 | 1                      |
| 3  | Circulation                                 | 37.8 | 1                      |
| 4  | Circulation Research                        | 20.1 | 1                      |
| 5  | Nature Communications                       | 16.6 | 1                      |
| 6  | Diabetes Care                               | 16.2 | 1                      |
| 7  | Chemosphere                                 | 8.8  | 1                      |
| 8  | Environmental Research                      | 8.3  | 2                      |
| 9  | Molecular Metabolism                        | 8.1  | 2                      |
| 10 | Diabetes / Metabolism: Research and Reviews | 8    | 1                      |
| 11 | Journal of Epidemiology and Global Health   | 7.3  | 1                      |
| 12 | Frontiers in Immunology                     | 7.3  | 3                      |
| 13 | Canadian Journal of Cardiology              | 6.2  | 1                      |
| 14 | Cells                                       | 6    | 4                      |
| 15 | Stem Cells Translational Medicine           | 6    | 1                      |
| 16 | Nutrients                                   | 5.9  | 1                      |
| 17 | iScience                                    | 5.8  | 1                      |

| Journal Name                                      | IF  | Number of Publications |
|---|-----|------------------------|
| 18 Journal of Clinical Endocrinology & Metabolism | 5.8 | 1                      |
| 19 Diabetes, Obesity, & Metabolism                | 5.8 | 1                      |
| 20 International Journal of Molecular Sciences    | 5.6 | 3                      |
| 21 Frontiers in Pharmacology                      | 5.6 | 3                      |
| 22 Frontiers in Cell and Developmental Biology    | 5.5 | 1                      |
| 23 Frontiers in Endocrinology                     | 5.2 | 6                      |
| 24 Cancers  | 5.2 | 1                      |
| 25 Frontiers in Public Health                     | 5.2 | 2                      |
| 26 Diabetes Research and Clinical Practice        | 5.1 | 1                      |
| 27 Frontiers in Molecular Biosciences             | 5   | 1                      |
| 28 Genes and Immunity                             | 5   | 1                      |

### Quartiles

In addition to the IF, rankings of journals in each subject category are divided into quartiles, which rank the journals from highest to lowest based on their IF. There are four quartiles: Q1, Q2, Q3 and Q4, which are explained in Table 3 below.

**Table 3. Definition of quartile ranking of DDI publications**

| Quartile        | Definition   |
|-----------------|--|
| Quartile 1 (Q1) | Denotes the top 25% of the IF distribution                     |
| Quartile 2 (Q2) | Denotes middle-high position distribution (top 50% to top 25%) |
| Quartile 3 (Q3) | Denotes middle-low position distribution (top 75% to top 50%)  |
| Quartile 4 (Q4) | Denotes lowest position (bottom 25% of the IF distribution)    |
| N/A             | No available score for the journal, not listed                 |

In 2023, a higher percentage of publications from the Research Sector were published in Q1 journals (76% of % indexed), while 94% of articles were published in either Q1 or Q2 journals; the breakdown of publications in quartiles Q1 and Q1 + Q2 is shown in Figure 2.

**Figure 2. 2023 Research Sector publications falling into Q1 and Q1 + Q2 quartile scores of % indexed.**



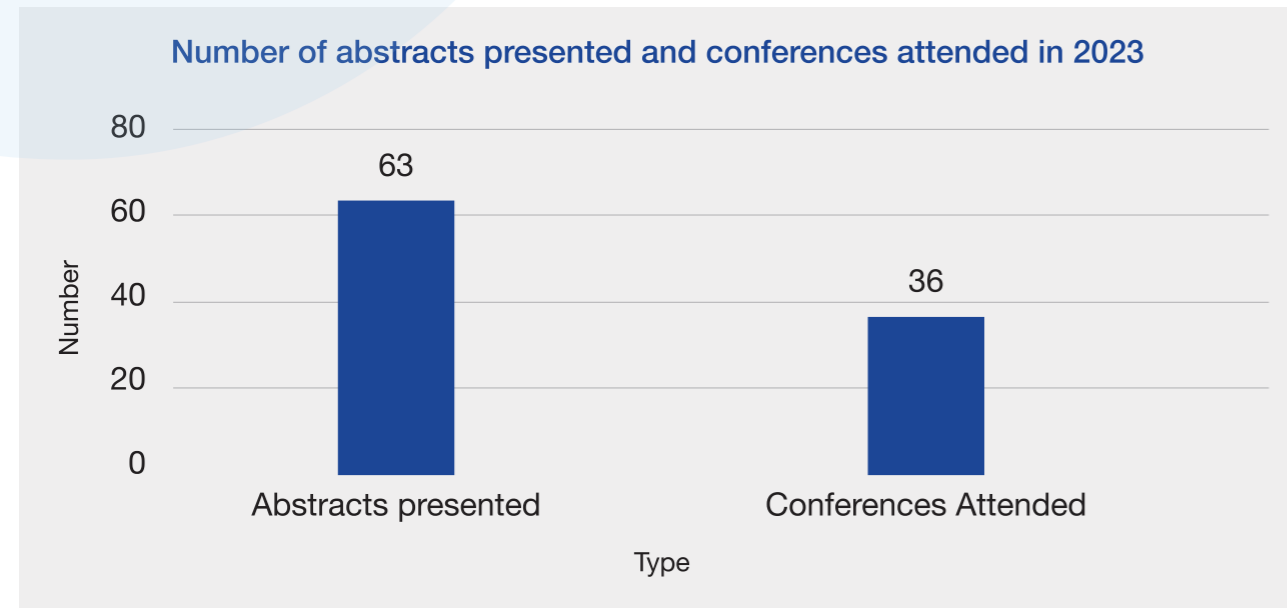
### Collaborative Publications

In 2023, the Research Sector partnered with leading institutions worldwide, resulting in the production of high-impact publications. Through collaborations at international, national, and regional levels, a total of 90 publications were successfully released.

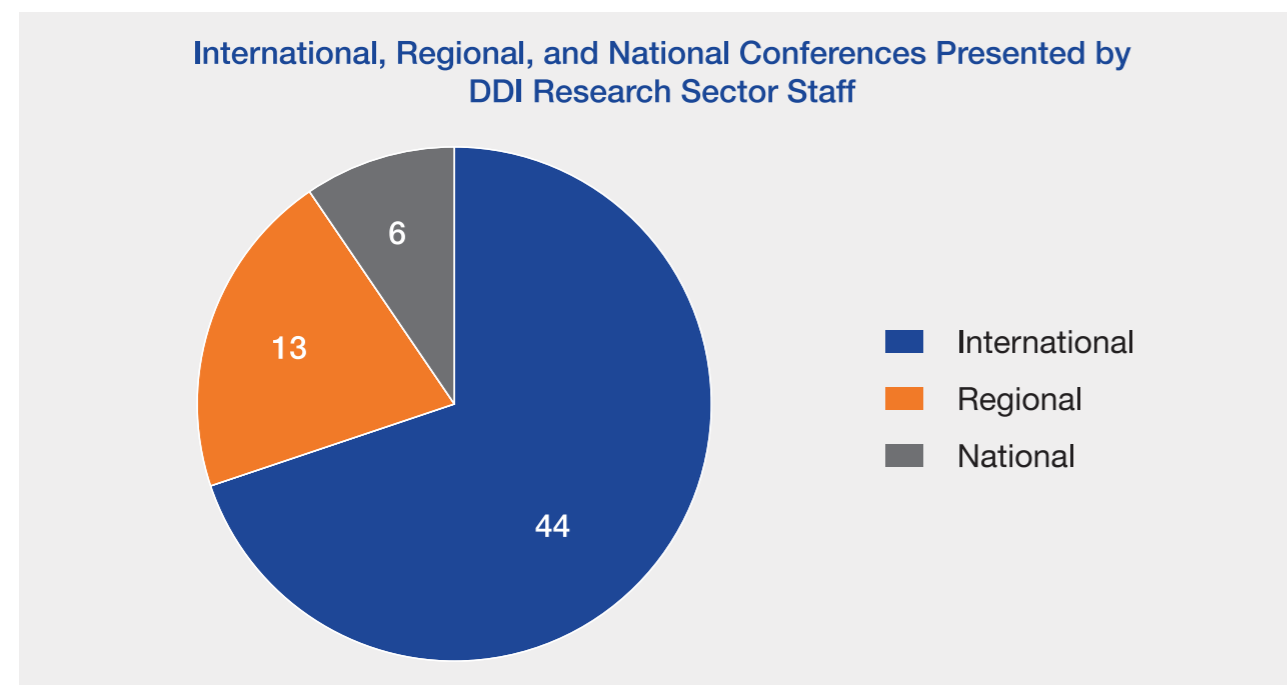
## Conferences

In 2023, the Research Sector staff of DDI presented **63 abstracts** at **36 conferences** (Figure 3). Researchers achieved unprecedented success in 2023 when **15 abstracts** were presented at the 83rd Scientific Sessions of the **American Diabetes Association (ADA)**. DDI researchers had the opportunity to present research from various areas currently conducted at DDI (Supplementary Table 1).

**Figure 3.** Breakdown of conferences attended and presented at by the Research Sector in 2023 by type.



**Figure 4.** Breakdown of conferences/events by region.

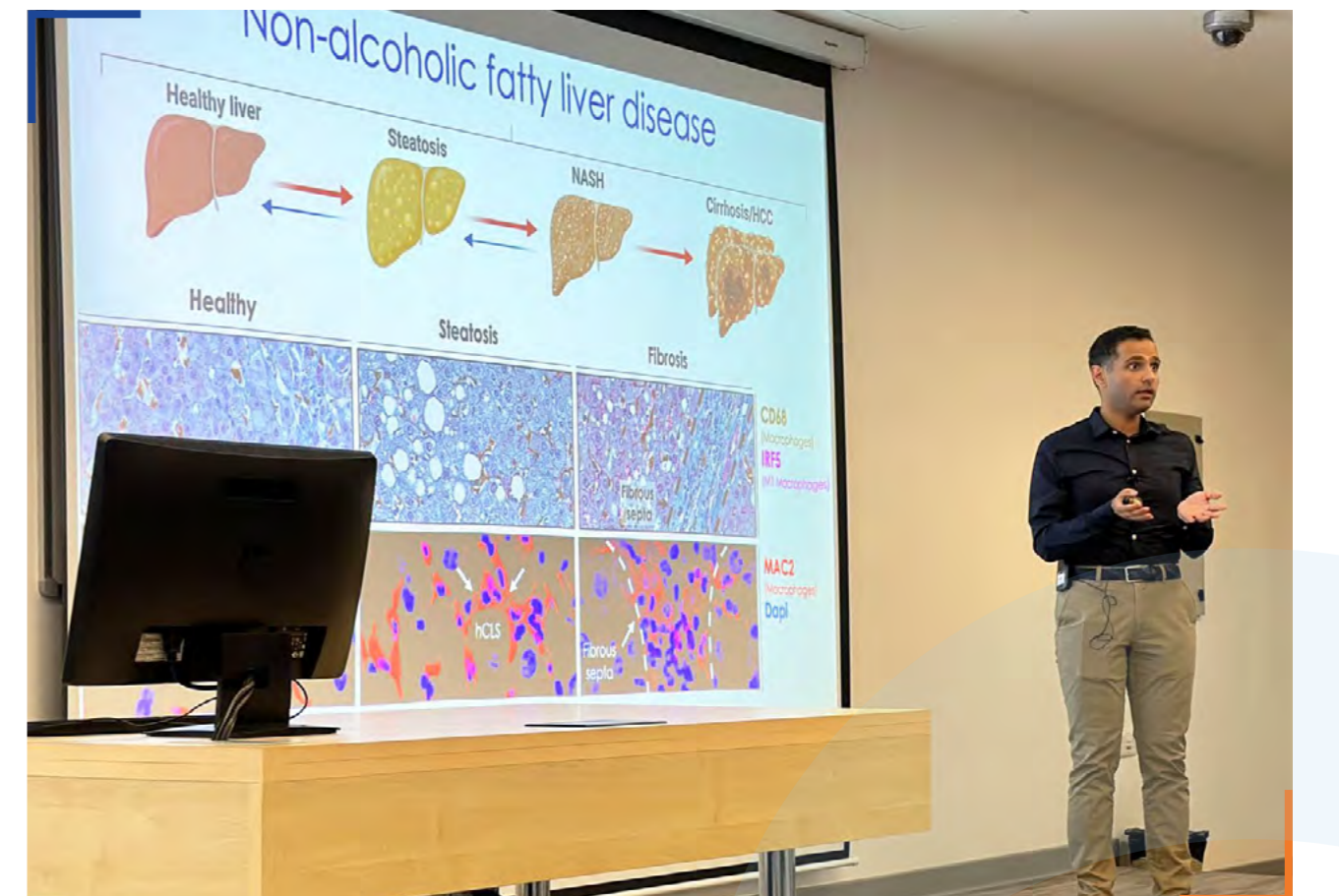


## Scientific Knowledge Transfer

In 2023, the Research Sector organized **51 internal lectures**, that included **26 Journal Clubs**, **14 Research Presentations**, and **11 Guest Lectures** (Table 5). Key research is also highlighted in a **quarterly-published Research Newsletter**, through which the achievements of researchers and upcoming events are disseminated among the Sector.

**Table 5.** Number of internal lectures, i.e., journal clubs, research presentations, and guest lectures by the Research Sector in 2023.

| Internal Lectures      |           |
|------------------------|-----------|
| Journal Clubs          | 26        |
| Research Presentations | 14        |
| Guest lectures         | 11        |
| <b>Total</b>           | <b>51</b> |



## Innovations & Patents

A new patent was granted in 2023, titled “Method for Preventing Progression to Type II Diabetes.”

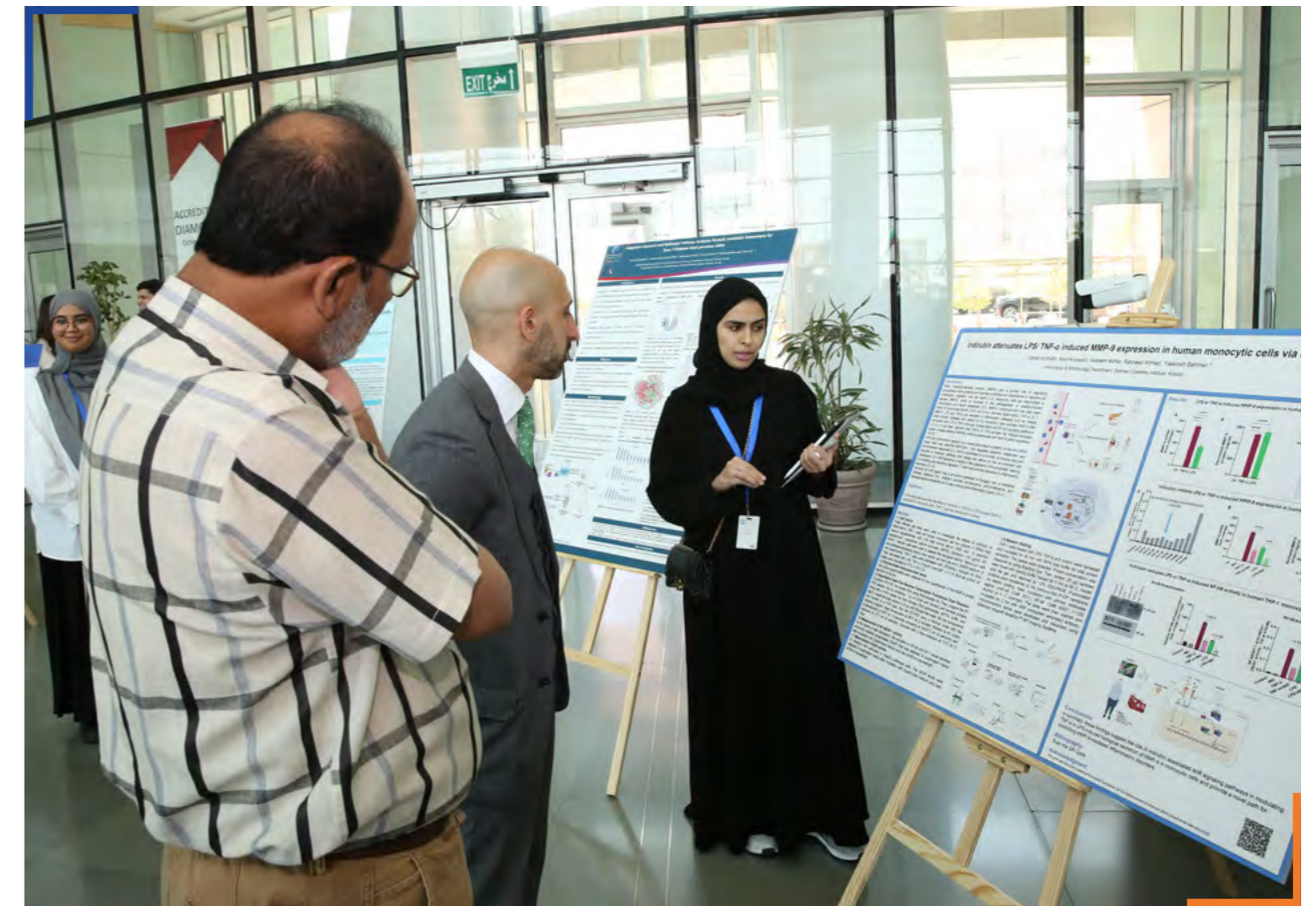
As of 2023, 5 patents have been approved and granted to DDI (Table 6).

Table 6. DDI patents approved till date.

| Docket No. | Year Granted | Title of Invention(s)   | Inventors            | Co-Inventor(s)   |
|------------|--------------|---|----------------------|--|
| 33024.00   | 2020         | Method for preventing progression to metabolic syndrome   | Prof. Fahd Al Mulla  | Raseeba Nizam, Dr. Ashref Madhoun  |
| 33024.01   | 2020         | Use of MicroRNA-103 as Inhibitor for dyslipidemia by repressing ANGPTL8 gene (2020)                           | Dr. Mohamed Abufarha | Dr. Jehad Abubaker, Prof. Fahd Al Mulla, Preethi Cherian, Irina Alkhairi   |
| 33024.02   | 2021         | Use of MicroRNA-181d as Inhibitor for dyslipidemia by repressing ANGPTL3 gene (2021)                          | Dr. Jehad Abubaker   | Dr. Mohamed Abufarha, Prof. Fahd Al Mulla, Irina Alkhairi, Preethi Cherian |
| 33024.10   | 2021         | Targeting Signaling Crosstalk Between IL-6 and TNF- $\alpha$ for Preventing MMP-9 Induced tumor growth (2021) | Dr. Rasheed Ahmad    | Prof. Fahd Al Mulla  |
| 33024.08   | 2023         | Method for Preventing Progression to Type II Diabetes   | Dr. Amal Ali Hasan   |  |

## Summer Internship Program

In 2023, the Research Sector hosted 22 interns in the Summer Internship Program. The interns were provided the opportunity to be part of research in their respective departments and produced high-quality outputs, such as publications and posters. The Research Sector, via the Summer Internship Program continues to foster the intern’s individual growth through knowledge advancement, skills development, and public engagement activities.

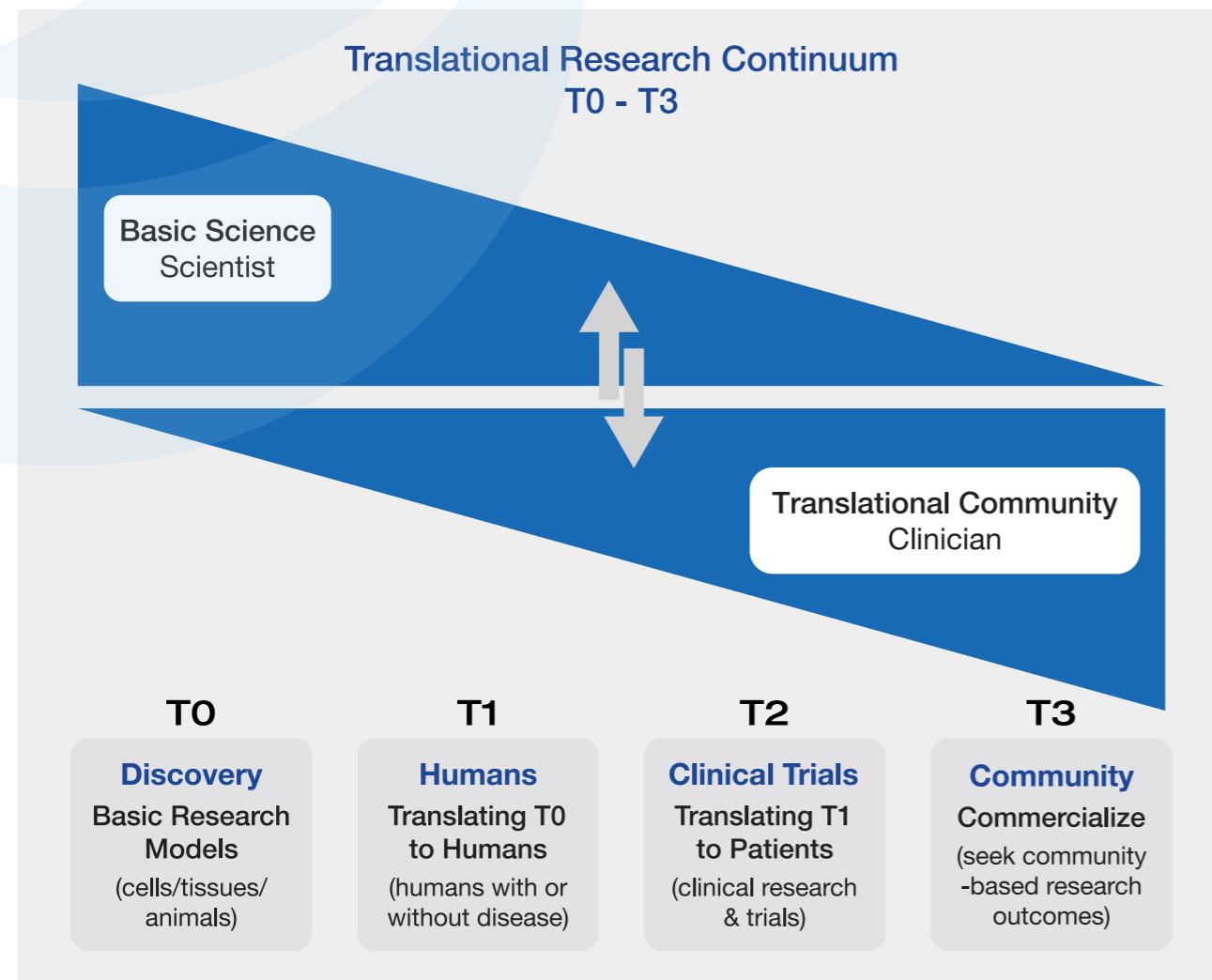


## New Department: Translational Research

Translational research is the process by which the findings of laboratory research or preclinical studies are ‘translated’ into novel methods of diagnosis or treatment. The term “bench-to-bedside” is often used to describe the bidirectional continuum in which research findings are propelled from the laboratory (bench) to patients (bedside) and populations, and back to basic research.

The Research Sector at DDI has implemented **Translational Research** as its core focus. Research is directed towards transforming scientific discoveries into clinically applicable models to reduce the incidence and impact of diabetes and its complications. Through the implementation of translational research practices, scientists aim to ensure that best practices, such as effective prevention strategies, are implemented for the benefit of the patients and communities.

**Figure 5.** Schematic representation of the continuum of translation research, from bench to bedside, and back, and their definitions.



**Definitions**

- T0:** Basic research exploring fundamental mechanisms of biology, disease, or behavior, performed in cell, tissue, or animal models.
- T1:** Understanding the concept in humans to design prevention methods based on basic findings.
- T2:** Adopting intervention methods demonstrated to be useful in a research environment to routine clinical care via clinical trials (Phase 1 to 3)
- T3:** Translation to communities; includes population-level outcomes, monitoring benefits and risks, and impacts on policy and change.

**Appendix**

**Supplementary Table 1.** List of poster and oral presentations by the Research Sector at the 83<sup>rd</sup> Scientific Sessions of the American Diabetes Association conducted on 23–26 June 2023 in San Diego, CA, USA.

| All Authors   | Presenting Author    | Department                  | Title  | Type (Poster/ Oral) |
|---|----------------------|-----------------------------|--|---------------------|
| Amal Hasan, Shihab Kochumon, Iman Albasiri, Fahd Almulla, Rasheed Ahmad   | Dr. Amal Hasan       | Immunology and Microbiology | Soluble Suppression of Tumorigenicity 2 is Directly Correlated with Body Fat, Metabolic Dysfunction, and Inflammation in Children and Adolescents                              | Poster              |
| Amal Hasan, Shihab P. Kochumon, Iman D. Albasiri, Shaima Abdeloushi, Ebaa S. Alozairi, Fahd Almulla   | Dr. Amal Hasan       | Immunology and Microbiology | Circulating Calprotectin is Increased in Children with T1D and Obesity: Implications for T1D Progression and Outcome   | Poster              |
| Rasheed Ahmad, Taxy K. Jacob, Shihab P. Kochumon, Reeby S. Thomas, Steve Shenouda, Nadeem Akhter, Ajit Wilson, Fatemah Bahman, Amal Hasan, Fatema Al-Rashed, Hossein Arefanian, Ashraf Al Madhoun, Fahd Almulla, Sardar T.A.K. Sindhu | Dr. Rasheed Ahmad    | Immunology and Microbiology | Differential Effects of Cocoa Butter, Sunflower, Soybean, and Fish Oil Based Sucrose-Free HFDs on Hepatic Steatosis, Lipogenesis, Inflammation, and Insulin Resistance in Mice | Poster              |
| Fatema Al-Rashed, Hossein Arefanian, Sardar T.A.K. Sindhu, Fatemah Bahman, Halemah Alsaeed, Ashraf Al Madhoun, Fawaz Alzaid, Fahd Almulla, Rasheed Ahmad  | Dr. Fatema Al-Rashed | Immunology and Microbiology | Neutral Sphingomyelinase Inhibition Limits Hepatic-Lipotoxicity and Inflammation in a Cell Model of Steatosis [Board No. 1609]   | Poster              |
| Fatemah Bahman, Halemah Alsaeed, Shaima Abdeloushi, Fahd Almulla, Rasheed Ahmad, Fatema Al-Rashed   | Dr. Fatemah Bahman   | Immunology and Microbiology | Regular Physical Activity Plays a Crucial Role in Improving the Anti-inflammatory Status of Healthy Individuals by Modulating TLR2 Expression                                  | Poster              |
| Sardar T.A.K. Sindhu, Nadeem Akhter, Ajit Wilson, Hossein Arefanian, Reeby Thomas, Shihab Kochumon, Fatema Al-Rashed, Fatemah Bahman, Ashraf Al-Madhoun, Fawaz Alzaid, Fahd Almulla, Rasheed Ahmad                                    | Dr. Rasheed Ahmad    | Immunology and Microbiology | ER Stress Drives the VEGF Expression in Monocytic Cells by Mechanisms Involving CHOP/ROS/HIF-1alpha/NRF2 and NF-kappaB/p38 MAPK Pathways                                       | Poster              |

| All Authors   | Presenting Author     | Department                  | Title   | Type (Poster/ Oral) |
|---|-----------------------|-----------------------------|---|---------------------|
| Hossein Arefanian, Ashraf Al Madhoun, Fatema Al-Rashed, Fatemah Bahman, Halemah Alsaeed, Nermeen A. Abukhalaf, Steve Shenouda, Michayla R. Williams, Rasheeba Nizam, Sumi E. John, Sindhu Jacob, Mohammed Alhusayan, Shibu J. Kurian, Shihab P. Kochumon, Sardar T.A.K. Sindhu, Fawaz Alzaid, Mohamed Abu-Farha, Jehad Abubaker, Alphonse T. Thangavel, Rasheed Ahmad, Fahd Almulla | Dr. Ashraf Al Madhoun | Immunology and Microbiology | Verapamil Increases $\beta$ -Cells Proliferation in MIN6 Cells and $\beta$ -Cell Mass in Zebrafish Model  | Poster              |
| Hossein Arefanian, Fatemah Bahman, Ashraf Al Madhoun, Fawaz Alzaid, Sardar T.A.K. Sindhu, Michayla R. Williams, Fatema Al-Rashed, Rasheeba Nizam, Sindhu Jacob, Sumi E. John, Mohammed Alhusayan, Shibu J. Kurian, Nermeen A. Abukhalaf, Steve Shenouda, Halemah Alsaeed, Shihab P. Kochumon, Mohamed Abu-Farha, Jehad Abubaker, Alphonse T. Thangavel, Rasheed Ahmad, Fahd Almulla | Dr. Ashraf Al Madhoun | Immunology and Microbiology | Increased Glucose Sensing and Insulin Secretion Induced by Verapamil Is Associated with Enhanced Oxygen Consumption Rate in MIN6 $\beta$ -Cells | Poster              |
| Hossein Arefanian, Fatemah Bahman, Ashraf Al Madhoun, Sardar T.A.K. Sindhu, Fatema Al-Rashed, Shihab P. Kochumon, Rasheeba Nizam, Sumi E. John, Sindhu Jacob, Mohammed Alhusayan, Nermeen A. Abukhalaf, Steve Shenouda, Halemah Alsaeed, Shibu J. Kurian, Michayla R. Williams, Fawaz Alzaid, Mohamed Abu-Farha, Jehad Abubaker, Alphonse T. Thangavel, Fahd Almulla                | Dr. Ashraf Al Madhoun | Immunology and Microbiology | Pretreatment with Verapamil Increases MIN6 Mouse $\beta$ -Cell Survival after Exposure to Cytotoxic Stressors                                   | Poster              |
| Mohammed Dashti, Naser Ali, Hussain Alsaleh, Rasheeba Nizam, Fahd Almulla, Thangavel Alphonse Thanaraj  | Dr. Mohammed Dashti   | Genetics and Bioinformatics | Mitochondrial Haplogroup H Is Protective against Type 2 Diabetes in Arabs from Gulf Region  | Poster              |

| All Authors   | Presenting Author  | Department  | Title  | Type (Poster/ Oral) |
|---|--------------------|---|--|---------------------|
| Jehad Abubaker, Salman Al-Sabah, Irina Al-Khairi, Preethi Cherian, Nermeen Abukhalaf, Hossein Arefanian, Carol Dsouza, Suleiman Al-Sabah, Fahd Almulla, Mohamed Abu-Farha.  | Dr. Jehad Abubaker | Biochemistry and Molecular Biology                          | Comparable Improvement in NAFLD, Weight Loss, and Lipid Metabolism in Rats Treated with Dual GLP-1-GIP Receptor Agonist (Tirzepatide) and Gastric Sleeve         | Oral                |
| Anindya Ghosh, Marc Prentki, Yat Hei Leung, Jeffrey Yu, Robert Sladek, Isabelle Chénier, Abel K. Oppong, Marie-Line Peyot, S.R.Murthy Madiraju, Irina Al-Khairi, Jehad Abubaker, Fahd Almulla, Mohamed Abu-Farha.       | Anindya Ghosh      | Biochemistry and Molecular Biology                          | Adipocyte ANGPTL8 regulates insulin sensitivity and thermogenic programming  | Oral                |
| Fathey Alawadi, samir H. Assaad-Kalilif, Wael Almahrmed, Naji Alamuddin, Hessa AlKandari, Jihad Haddad, Lise Lotte N. Husemoen, Rayaz A Malik, Emel Mashaki Ceyhan, Hani Sabbour, Sam Salek, Gputav Yadav, Subodh Verma | Hessa Alkandari    | Population Health   | Prevalence of Atherosclerotic Cardiovascular Diseases in women with Type 2 Diabetes across the Middle East and Africa: Primary Gender analysis of PACT-MEA Study | Poster              |
| Ashraf Al Madhoun, Dania Haddad, Shihab Kochumon, Sardar T.A.K. Sindhu, Reeby Thomas, Lavina Miranda, Fatema Al-Rashed, Rasheed Ahmad, Fahd Almulla.  | Ashraf Al Madhoun  | Genetics and Bioinformatics; Immunology and Microbiology    | Adipose Tissue Dectin-1 Upregulation in Hyperglycemic Obesity Involves TNF- $\alpha$ /NF- $\kappa$ B   | Poster              |
| Siham Abdelgani; Ahmed Khattab; John Adams; Mohamed Abu-Farha; Guisepe Daniele; Fahd Almulla; Stefano Del Prato; Ralph A. DeFronzo; Muhammad Abdul-Ghani  | Siham Abdelgani    | Translational Research / Biochemistry and Molecular Biology | Distinct Mechanisms Responsible for the Increase in Glucose Production and Ketone Formation Caused by Empagliflozin in T2DM Patients                             | Poster              |

# MEDICAL SECTOR



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## MAIN HIGHLIGHTS AND ACHIEVEMENTS - 2023

### IDF Centre of Excellence Recognition



In 2023, the International Diabetes Federation (IDF) renewed DDI's status as an 'IDF Centre of Excellence' in diabetes care.

This award recognizes DDI's efforts to maintain the highest standards of diabetes care in Kuwait. The IDF has designated 22 Centers of Excellence in six regions. DDI is one of 4 centers of Excellence in the MENA Region.

### College of American Pathologists Accreditation



The Medical Sector continued to maintain the highest standards of quality and patient care in compliance with CAP standards. Through a uniform and systematic quality management plan, the Sector ensures that quality and patient care requirements are being continuously met each time, in every section, every day.

### Royal College of Surgeons of England





DDI was able to maintain the certification by the Royal College of Surgeons of England to deliver Basic Surgical Skills (BSS) until June 2025. This course introduces surgical trainees to safe surgical practice within a controlled workshop environment and aims to "teach, assess and certify" the ability of trainees to use safe and sound surgical techniques that are common to all forms of surgery.

### Main highlights of the Sector

DDI's Medical Sector attracted a visit from the Juvenile Diabetes Research Foundation (JDRF).




JDRF is a charity that focuses on improving quality of life with T1DM, preventing its development, and finding a cure. The JDRF works closely with HCPs and researchers to fund research projects, ensure access to treatment for people with T1DM, and connect the T1DM communities.



| WON   | PRESENTED   |
|---|---|
|  <p>Education and Self-Management Award from Diabetes UK Conference 2023</p> |  <p><b>38</b><br/>Posters in regional and international conferences</p> |



| MEDICAL SECTOR RESEARCH   |  |   |
|---|--|---|
|  <p><b>14</b><br/>Original Research Publications</p> |  <p><b>2</b><br/>Review</p> |  <p><b>6</b><br/>Other</p> |

\* Reviews include Reviews, Editorials, Comments, Letters to the Editor, Short Communications.

\*\* Others refers to collaborative papers and publications where DDI staff are co-authors, but none of the actual research was done within DDI (excluding data sharing).

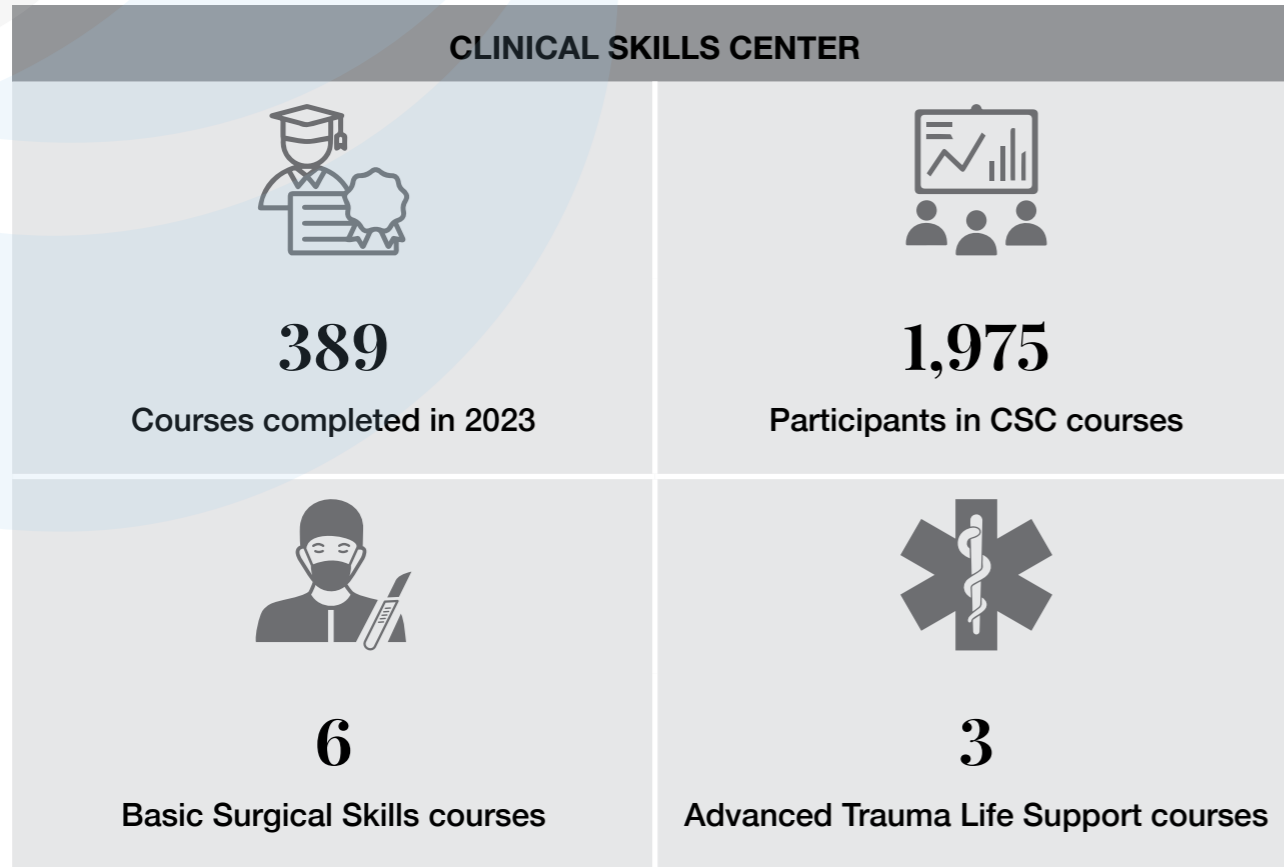
| CLINICAL SERVICES   |   |  |
|---|---|--|
|  <p><b>4,525</b><br/>Total number of patients seen in 2023</p> |  <p><b>60,141</b><br/>Total number of appointments in 2023</p> |  <p><b>391</b><br/>Patients screened with full psychometry analysis</p> |

| PHARMACY   | DIAGNOSTIC IMAGING CENTER  |
|--|--|
|  <p><b>322</b><br/>Medication QR codes offered to help patients</p> |  <p><b>3,713</b><br/>Total number of investigations performed (MRI, CT, X-ray, Ultrasound, BMD, Vascular lab)</p> |

| PODIATRY  |  |
|---|--|
|  <p><b>2,602</b><br/>Patients seen in Podiatry</p> |  <p><b>100%</b><br/>of all neuropathic healed wounds remained healed for the following 3 months</p> |

|   |  |  |
|---|--|--|
|  <p><b>65</b><br/>New wounds treated</p> |  <p><b>34</b><br/>Treated wounds healed</p> |  <p><b>17</b><br/>Treated wounds referred for vascular Management</p> |
|---|--|--|

## Clinical Skills Center



- Accredited by American Heart Association (AHA) International Training Center.
- Maintained certification by Royal College of Surgeons of England to deliver Basic Surgical Skills (BSS) courses
- Received Certificate of Appreciation from AHA



## EDUCATIONAL PROGRAMS & WORKSHOPS

### FOR PEOPLE WITH TYPE 1 AND TYPE 2 DIABETES (T1DM & T2DM)

#### Dasman Juniors Program (T1DM | Ages 7-10)

Dasman Juniors Program, led by the Nutrition and Education & Training (E&T) Units, is a 5-day structured group education program (children and parents) that aims to enhance glycemic control by fostering self-management skills in children. Parents attend 2 days (4 hours/day), and the children attend 3 days (4 hours/day).

- **3** courses were conducted for **15** children and their parents



## KICK-OFF Program (T1DM | Ages 11-15)

The Kids in Control of Food (KICK-OFF) educational program, led by the Nutrition and E&T Units, is a 4-day structured group education program specifically designed for adolescents and their parents. It aims to enhance glycemic control and foster self-management skills to manage and reduce the risk of long-term diabetes complications and improve the quality of life.

- **10** KICK-OFF courses were conducted for **50** adolescents and their parents
- **2** KICK-OFF Refresher courses were conducted for **24** adolescents and their parents



## WICKED (T1DM | Ages 15-18)

Working with Insulin, Carbohydrates, Ketones and Exercise to manage Diabetes (WICKED) courses aim to equip adolescents living with T1DM in Kuwait with the tools and knowledge to optimally self-manage their blood sugar levels.

- **4** courses were conducted in June, July, August, and September 2023 with a total of **25** graduates.



WICKED is considered a pre-DAFNE (Dose Adjustment For Normal Eating) course that will helpfully ease the transition of young people to the widely implemented and well-structured evidence-based program for adults – DAFNE.

## DAFNE (T1DM)

A five-consecutive-day structured education program designed for adults with T1DM. Refresher courses are provided to DAFNE graduates with information on specific topics, including diabetes self-management, handling sick days, and emergency diabetes care.

- **17** DAFNE courses were conducted for **126** participants, with a 1-day post-course after 2 weeks.
- To date, the total cumulative number of DAFNE courses conducted is **141** with **928** DAFNE graduates.
- **9** DAFNE refresher courses for **175** graduates were conducted.



DAFNE Clinical improvements include:

- **0.77%** improvement in patients' HbA1c level.
- **48.82%** of DAFNE graduates achieved an HbA1c level less than or equal to 7.5%.
- **96.6%** of DAFNE graduates achieved a reduction of incidence rate of Severe Hypoglycemia.
- **98.2%** of DAFNE graduates achieved a reduction of incidence rate of Diabetes Ketoacidosis (DKA).
- **78.47%** of DAFNE graduates yearly data have been collected by using the UK DAFNE-based questionnaire.

**DAFNE Ramadan Workshop:** A two-day program that aims to provide DAFNE graduates with comprehensive care through our monthly follow-ups, annual check-ups, and the delivery of a Ramadan plan to support a healthy fasting period. A total of **67** participants took part in the Ramadan workshop.

**DAFNE clinic:** The educators offered diabetes care support to individuals with T1DM, including both DAFNE graduates and non-graduates. In 2023, the total number of appointments was **3,282**.

- Collected data from **658** people with T1DM from various hospitals\*.

\* The gathered information is expected to promote diabetes management through follow-ups based on the DAFNE principles and practices.

## Diabetes Journey Workshop (T2DM)

Led by the E&T and Nutrition Units, the workshop provides DDI and non-DDI patients with T2DM with the practical skills to manage diabetes and to deal with day-to-day challenges. It is an interactive 4-hour workshop to help patients optimize diabetes self-management skills by improving their knowledge and understanding of their condition.

- **8** workshops were conducted for **42** adults.



## Cooking Workshop

The Nutrition Unit launched a new cooking workshop for DDI and non-DDI patients, with T2DM or prediabetes, designed to educate participants on preparing nutritious, diabetes-friendly recipes for better blood glucose control.

- **2** workshops were conducted for **15** participants.

## Education Clinics (Adult & Pediatric)

Diabetes Educators worked closely with patients and multidisciplinary team members to reach optimal glycemic and other metabolic therapeutic targets. The clinic offered educational sessions for pediatrics with T1DM and adults with T2DM through education clinics. By providing knowledge, motivation, and support, these interactive sessions aim to provide the necessary skills for diabetes self-management and ultimately empower patients.

- **5,277** Education Clinic appointments were made in 2023.

## Diabetes Remission Program

The Program offers a well-structured dietary plan to adults with T2DM that can result in diabetes remission at HbA1c <6.5%, along with significant medication reduction. People who are newly diagnosed can control their diabetes without medications through lifestyle methods only, following a food-based, very low-calorie diet.

- Average weight loss of 7.8 kg, ranging from 3.7% to 14.4% body weight.
- Average HbA1c reduction of 0.98%
- 60% of patients achieved an HbA1c of less than 6.5%
- 50% reduction in patients' diabetes medications
- 30 new patients enrolled, with 14 completing their 3-month follow-up period.

## EDUCATIONAL PROGRAMS & WORKSHOPS

### FOR HEALTHCARE PROVIDERS

## SMART Workshop

The Workshop provides healthcare professionals utilizes the IDF curriculum and the ADA Standard of Care guidelines to optimize diabetes management and prevention/delay diabetes related impact.

- **12** SMART workshops were conducted for **18** participants.

## PAAET & MOH nurses/educators Clinical Training Course

This Course provides advanced clinical training for nurses and health educators to shadow DDI clinicians and raise diabetes healthcare standards of primary and tertiary care settings in Kuwait.

- **11** training courses were conducted for **17** participants.



## What School Personnel Should Know (WSPSK E-Learning Program)

The E-Learning Program offers opportunities for school nurses and teachers to learn and understand the needs of children with diabetes. It also provides the necessary tools to address the daily challenges children might face in schools.

- **15** programs were conducted for **197** school nurses and teachers.



## SAAD Academy (Youth Internship Program)

The Internship Program offers high school students a unique experience to explore their occupational interests in medical fields. Students are given the opportunity to learn, discuss, and live the practice of their desired profession by attending different clinical services at DDI. These services include adult and pediatric diabetology clinics, education clinics, nutrition clinics, and pharmacotherapy clinics.



## Online Diabetes Management Program

The E&T Unit launched a new online comprehensive program for healthcare professionals who are interested in expanding their knowledge about up-to-date diabetes best practices. This course has been designed based on the latest guidelines of the American Diabetes Association (ADA) and International Diabetes Federation (IDF) to augment scientific knowledge and expertise of healthcare practitioners in diabetes. It is a self-paced certificate program that covers diabetes classifications, pathophysiology, screening and diagnosis, complications, pharmacotherapy, and lifestyle modification approaches.

*Link: <https://edu.dasmaninstitute.org/course/diabetes-management-program/>*

- **64** healthcare professionals registered to the program.

## Optimizing T2DM Care Plan Workshop

Piloted in 2023, this new comprehensive interactive workshop provides primary care physicians and general practitioners with up-to-date evidence-based information that aims to enhance core skills and competence of primary healthcare professionals. It also aims to address the prevention, early detection, and optimized control of T2DM.

- **5** educational lectures were conducted for HCPs within DDI.

## Nutrition for Pediatric T1DM Program

Our new intensive training program was launched by the E&T Unit for dietitians from the Ministry of Health (MoH). This program aims to equip dietitians with the latest knowledge and tools to enhance the overall quality of diabetes care in the healthcare system.

- **2** courses were conducted for **29** MoH dietitians from **9** hospitals and healthcare centers.

## Diabetic Retinopathy Workshop

In collaboration with the Primary Healthcare Directive, DDI conducts multiple Diabetic Retinopathy workshops to enhance the skills and knowledge of HCPs in primary care across the MoH. The aim of these workshops is to optimize the standard screening procedures, differentiate the stages of diabetic retinopathy and identify them to initiate the appropriate guidelines for referral.

- **6** workshops were conducted for **75** HCPs in primary care across the MoH.



## Prevention and Management of Diabetic Foot Complications Workshop

(In collaboration with the World Health Organization)

The Diabetic Foot Complications Workshop aims to equip HCPs with the knowledge and ability to assess the foot in a person with diabetes, appropriately classify foot risk, provide appropriate self-care education, successfully identify and effectively manage diabetes related foot complications, and know when to refer for specialist care.

- **11** physicians completed the Program in 2023.

## Pharmacotherapy Management of Diabetes Complications Course

This training course is a joint effort, with the Ministry of Defense (MoD), to provide up-to-date knowledge based on the latest guidelines on drug treatments to control diabetes for pharmacists and pharmacy workers.

- **40** pharmacists completed the training course in 2023.



## COLLABORATIONS

The Medical Sector has established and maintained several national, regional and international Collaborations; these include DAFNE UK, University of Glasgow, Ulster University, Tufts University, Sunnybrook Research Institute, WHO, Kuwait University, PAFN, and MoH. Through our collaboration with Tufts University, we have been participating in the International Weight Control Registry, being highlighted as the best recruitment site. We are also a World Obesity Federation Center. Through our T1DM pioneering work, we have been successful in being part of the EU Sophia Consortium. We locally collaborate with the Primary Care on the Obesity Pathway and the Kuwait Obesity Association.

## PATIENT SATISFACTION AND COMPLAINTS

To improve the quality of services provided to patients, complaints are managed by the Patient Liaison Officer and reviewed by members of the Quality and Safety Management Committee (QSMC). In addition, the Patient & Family Advisory Council (PFAC) was established to gain patient perspectives and help DDI incorporate this in all aspects of clinical services, media plans, and research.

## STANDARDS OF CARE

DDI follows the latest ADA guidelines and performance is measured against compliance with these standards. Furthermore, the patient care pathway has been redesigned to be aligned with the strategic objectives of prevention and management of diabetes and its complications.

## PATIENT SAFETY

Patient safety activities are implemented through the joint effort of the Medical Sector Units, QPS Team, QSMC, the Emergency & Safety Committee, and the ERM Committee at DDI. Furthermore, the risk registry for Medical Sector related incidents is regularly updated on an annual basis. The proposed mitigating factors and preventative measures for these risks are discussed and managed by the ERM committee. Patient Safety related incident reports are reported to the Ministry of Health semiannually, in accordance with the MOH decree (311/2015).

## CLINICAL RESEARCH

Clinical research plays a critical role at DDI and by utilizing our resources at the Medical Sector, we can recruit research participants and conduct our trials efficiently and effectively.

In 2023, we have published a total of 17 publications and a median impact factor of 5.2. We had a total of 18 ongoing studies, 7 of which are clinical trials.

Some of our ongoing studies include:

- **The vascular brain changes in people with diabetes. (in collaboration with Sunnybrook Research Institute, Toronto)**  
Assess people with diabetes using brain MRI scans and implementing the first Arabic cognitive battery.
- **Effects of home-based resistance exercise on body composition, muscle strength, and glycemic control in people with T2DM**

In 2023, DDI's Medical Sector completed a clinical trial aimed at developing innovative exercise regimens for individuals with ~~type 2 diabetes (T2DM)~~, tailored to Kuwait's extremely hot climate. The trial explored whether home-based resistance band exercises, performed for 15 minutes, three times a week, could enhance muscle function and improve overall health outcomes.

Our work on this was presented as a talk in the Diabetes UK conference in 2023 and we won the Education and Self-Management Award. Our ~~type 1~~ research has also attracted a visit from the JDRF to DDI to look at new research opportunities. We are always striving towards enhancing the recognition of DDI regionally and internationally, and in 2023 we presented multiple oral and poster presentations at 23 regional and international conferences (ADCES, ADA, DUK, AHIMA, AACE, IDF, ISPAD, ATTD).

# OPERATIONS SECTOR

The Operations Sector's services revolve around the applications and tools used by employees, email services, clinical systems, data extracts, networks services, computer hardware, printing services, telephone services, as well as web portal.

## Major Achievements

### Face Recognition

To enhance the building security and improve infection control, the IT department replaced all the fingerprint access control devices with face recognition devices.

### IT Training

The IT department delivered 159 training sessions in different subjects, such as IT orientation, Security awareness, Incident reporting, EHR, IPS, and Microsoft office products.

### Interns

The IT department hosted 3 new interns from Kuwait University during 2023.

### Core Switch

All outdated core switches were replaced and upgraded with new Cisco catalyst 9400 series.

### Data backup and IT Disaster Recovery

Implement new backup to SSD disks as a tape solution (RDX) for offline backups. As well, successfully completed two test drill for selected services related to IT Disaster Recovery Plan.

### CSSD Workflow System

Go live with the CSSD workflow system and adding reports for users to track the usage, reports are integrated with EHR notes.

## Dynamics 365

Go live with Dynamics 365, with the integration with the local procurement portal. Working on enabling new features such as mobile application for approvals and Warehouse management system.

## HIPAA Compliance

Successfully renewed the HIPAA compliance for 2023-2024. HIPAA helps to ensure that any information disclosed to healthcare providers and health plans, or information that is created, transmitted, or stored by them, is subject to strict security controls. Patients are also given control over who their information is released to and who it is shared with.

## New servers and storage capacity

Replace outdated physical servers in the main and disaster recovery sites and add them to production and failover cluster, also adding extra storage capacity to the research platform.

## EHR Contract

Establish the EHR phase 2 development and working with medical and Myca teams.

Working closely with the pharmacy team to integrate the Wolters Kluwer into the pharmacy module in the EHR.

## Mobile Patients Application

Two versions of the application are submitted for apple and google stores.

## Linkshadow

Implement Linkshadow NDR solution and start monitoring and learning the environment and end user behavior.

## Cybersecurity Presentation

Presented the first IT Cybersecurity presentation to all DDI staff, during the session we gave more information about security, advice on dealing with suspicious attacks, and overview about implemented solutions in DDI.

## DasmanSwitch

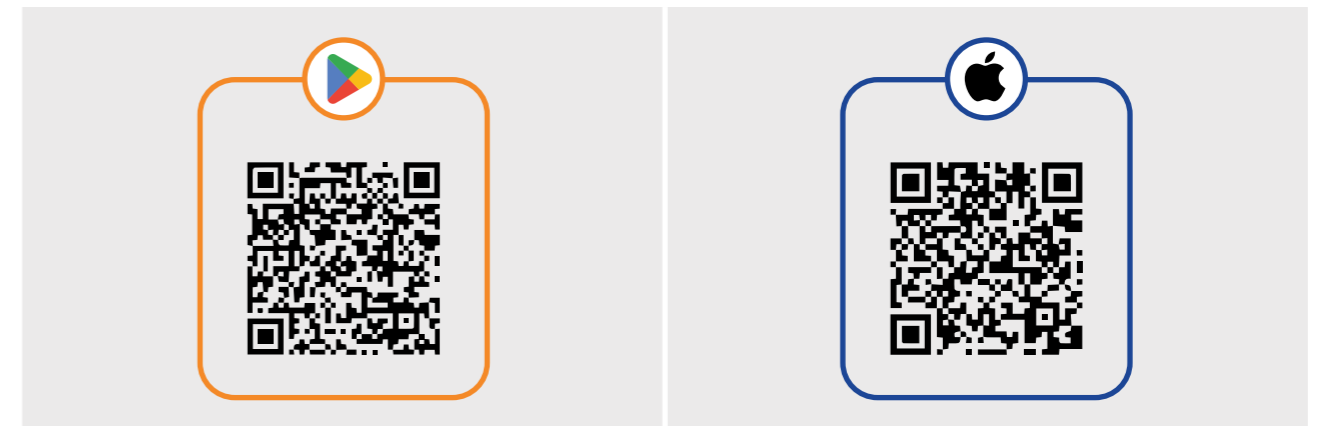
DasmanSwitch, a collaborative project with The George Institute (TGI) Australia, is a data-technology platform consisting of an online database system called the Content Management System (CMS), and an mHealth app with an unprecedented filter tailored for people with diabetes (DiabetesSwitch filter) and other nutritional needs.



DASMANSWITCH

Our DasmanSwitch App (formerly known as FoodSwitch Kuwait) empowers individuals to make better food choices when shopping at the cooperative society. It provides simple nutritional information on a packaged food product and suggests healthier alternatives to 'switch' to. It also provides a personalized experience for people with diabetes to fit their nutritional needs.

The App is free, available for both Android and iOS mobile phones and targets people with diabetes or anyone who wants to eat healthy, track calories, avoid gluten or look for products that are low in sugar!



## How It Works?

- **Download the DasmanSwitch App** on your mobile phone and open the App.
- **Scan the barcode** of a food item
  - » The App will present you with immediate, easy-to-understand information about that product's nutritional make-up.
- **View results**

Results of the scanned item are presented as either a 'Health Star Rating' or as color-coded 'traffic light.'

  - » The 'Health Star Rating' (HSR default viewing mode) scores foods between 0.5 stars (least healthy) to 5 stars (healthiest).

- » The color-coded 'traffic light' (TLL viewing mode) icons show key nutrients as **green** (good), **amber** (so-so) and **red** (bad).



- **Choose a filter**

Alternatives are filtered according to your choice from the following Switch filters that reflect your nutritional need:

- » **Classic FoodSwitch:** To make overall healthier choices based on the amount of fats, sugars, salt, energy, protein, dietary fiber, fruits, vegetables, nuts, and legumes (FVNL) content and for some products, calcium.
- » **EnergySwitch:** To make healthier choices with reduced Calorie intake. Ex: High cholesterol patient.
- » **SugarSwitch:** To make healthier choices with lower sugar content. Ex: Low-carbohydrate diet follower.
- » **DiabetesSwitch** is specifically designed for people impacted by diabetes to help them better manage their diet. It considers the level of nutritive carbohydrates or Net Carbs.
  - Results displayed in TLL mode only.
  - Provides information relevant to the condition: Energy, Protein, Sat Fat, Net Carbs, Fiber, and Salt.

*Note: DasmanSwitch App is available in Arabic only, but the screenshot is translated in English for illustrative purposes.*



- **In addition**, the gluten tag below the name of the products is presented for people impacted by celiac disease or other gluten-related sensitivities to help them easily identify their gluten status.

- **Choose your switch**

DasmanSwitch presents a list of similar foods that are healthier alternatives for you to 'switch to'.

*See for yourself why we are one of the top health and fitness apps!*

## Achievements

### 2019 - Present

In collaboration with Adailiya Cooperative Society, research work is being conducted to integrate DasmanSwitch food and beverage data with the cooperative society's customers purchase data.

### 4 April 2023

Data entry process was updated for future implementation of the allergens feature on the App. TGI trained the local Data Manager for the DasmanSwitch App on how to enter the ingredients and allergens information in the CMS in preparation for the biennial DasmanSwitch data entry.

### 9 May 2023

DDI's GeoHealth Lab team presented the "DasmanSwitch Data Tour" to Prof. Mark Daniel, Consultant Epidemiologist. It aimed at studying the data and research aspects of the project.

### February and March 2024

DDI's GeoHealth Lab team conducted a test for the planned biennial DasmanSwitch data recollection at Mishref Cooperative Society.

### 24 April 2024

DDI's GeoHealth Lab team attended the seminar titled "Labeling front of packs for food products with Traffic Light labels" organized by Kuwait Chamber of Commerce and Industry to discuss ways of cooperation with the presenter; the Public Authority for Food and Nutrition (PAFN).

### May - July 2024

Dasman Diabetes Institute's GeoHealth Lab team collaborated with Kuwait Technical College (ktech) on offering a long-term internship (3 months) for students to work on the DasmanSwitch 2023 Data Entry Project.





## Future Plans

Implement the allergens feature, develop the logic and cut-off values to show the DiabetesSwitch filter in the Health Star Rating (HSR) mode, and offer the English language (multilingual app) in the DasmanSwitch App. The implementation of the Planetary Health rating, the added sugar value, and the profile and purchases features are still being studied.

*We believe our app is distinguished by its idea of encouraging users to change their lifestyles to be healthier by following the rule of “alternatives” instead of “dos and don’ts” to their diet. This should facilitate continuity for them which is crucial knowing that “It is not a short-term diet: it is a long-term lifestyle change”.*

## About the Dasmanswitch App




### FACTS

|   |  |
|---|--|
|  <p>Launched in <b>10</b> countries (Parent FoodSwitch App)</p> |  <p>Kuwait <b>1<sup>st</sup></b> FoodSwitch licensed country in the MENA region</p> |
|  <p>One of the most trusted apps for health advice*</p>        |  <p><b>1<sup>st</sup></b> diabetes-focused filter in the World</p>                 |


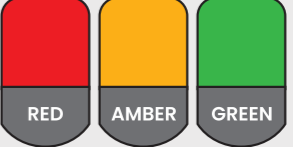
\* Parent FoodSwitch App was certified by ORCHA with a review score of 74% in 2020

## STATISTICS





Since App official launch (13 December 2020) until 21 May 2024

|  |  |  |
|--|--|--|
| <p><b>10,167</b><br/>App active users</p> <div style="display: flex; justify-content: space-around;"> <div>  <p><b>7,458</b></p> </div> <div>  <p><b>2,805</b></p> </div> </div> |  |  <p>0 36000 29145 2</p> <p>More than<br/><b>46,103</b> scans done</p> |
|--|--|--|

More than **46,097** using Modes

|  |  |
|--|--|
| <p>Health Star Rating (HSR) Mode</p>  <p>More than <b>33,718</b></p> | <p>Traffic Light Labels (TLL) Mode</p>  <p>More than <b>12,379</b></p> |
|--|--|

More than **45,087** using Filters

|   |  |   |  |
|---|--|---|--|
| <p>FoodSwitch Classic Filter</p>  <p>More than <b>38,761</b></p> | <p>EnergySwitch Filter</p>  <p>More than <b>2,003</b></p> | <p>SugarSwitch Filter</p>  <p>More than <b>4,189</b></p> | <p>DiabetesSwitch Filter</p>  <p>More than <b>134</b></p> |
|---|--|---|--|

# PUBLIC AWARENESS ACTIVITIES



## Public Awareness Activities

DDI's activities and initiatives aim to reflect our mission: to address the diabetes epidemic in Kuwait through focused diabetes research, integrated prevention, training, and education. Therefore, the Institute utilizes multiple platforms to:

- Engage the public in DDI's ongoing activities, campaigns, initiatives, and events.
- Raise awareness on diabetes management, treatment, and prevention.
- Advocate for a healthier lifestyle through TV and Radio interviews.
- Highlight DDI's accomplishments on mass and social media.
- Provide easy and accessible educational resources.
- Improve public awareness on diabetes and health related conditions.

## Activities

Throughout 2023, DDI has had an array of educational activities for the public, medical professionals, scientists (people within the sciences), or children.

### LECTURE, WORKSHOPS, CONFERENCES

#### For Healthcare Professionals

#### 1. What School Nurses Should Know About Diabetes

School nurses and teachers play an important role in managing a child's diabetes while they are at school. This program was developed to ensure that school staff are well equipped to manage children's daily diabetes-specific needs, reduce any diabetes-related risks, and manage diabetes emergencies.

#### 2. Towards an Ecological Perspective on Cardiometabolic Disease by Professor Mark Daniel

Professor Mark Daniel, Consultant Epidemiologist at DDI, shared his research findings with DDI staff and medical professionals from the MoH. His research focuses on the biopsychosocial pathways shaping diabetes and other metabolic diseases and planning, implementing, and evaluating prevention programs.



### For Scientists and Clinical Researchers

#### 1. Kuwait and Texas Collaboration: Ground-Breaking Diabetes Update

Professor Ralph DeFronzo, Professor of Medicine at the Diabetes Division in the University of Texas Health Center, gave a scientific seminar in collaboration with DDI's researchers to provide the latest information on the changing ADA guidelines, diabetes treatment, genetics of diabetes, and more.

#### 2. Second Kuwait-Dutch Obstructive Sleep Apnea Symposium

DDI held its Second Kuwaiti-Dutch Obstructive Sleep Apnea Symposium: Precision Identification of People with OSA, with the attendance of His Excellency Ambassador of the Kingdom of Netherlands, Mr. Laurens Westhoff, and Professor Nicolas DeVries. Various related topics were discussed including potential collaborative research projects to better understand, diagnose and treat OSA in Kuwait in the near future.

### For Students

#### 1. Rubu' Qarn Foundation for Creating Leaders – UAE (coordinated by KFAS)

A delegation of exceptional students from Sharjah's youth center visited DDI to learn more about research, diabetes care, and the operations behind a multi-faceted institution.



## 2. Summer Internship Program

DDI's Summer Internship Program continues to offer a unique opportunity for university students and recent graduates to develop core skills in biomedical and clinical research. Students are given the opportunity to work, supervised, in many diverse diabetes research projects and initiatives.



### For the public

#### 1. 'Your Health in Your Food' Cooking Workshop

DDI's new workshop offers people with T2DM a unique opportunity to learn how to prepare nutritious, diabetes-friendly recipes for better blood glucose control. Designed by the Medical Sector's Nutrition Unit, these classes aim to educate attendees on a variety of low carbohydrate options, how to prepare them, and clarify any misconceptions about food impact on diabetes.

#### 2. Diabetes Awareness Lectures for the Kuwait Direct Investment Promotion Authority (KDIPA)

A team of KDIPA employees attended several lectures presented by DDI's Medical Sector teams in efforts to educate and improve public awareness of diabetes and health related conditions. These lectures also stressed the importance of maintaining a healthy and active lifestyle.

## 2. World Diabetes Day

DDI held its Annual World Diabetes Day event in Al Hamra Tower. This event commemorating November the 14th, official World Diabetes Day, allowed visitors to consult with diabetes specialists and nutritionists. Visitors also had a chance to gather medical information from the different booths where our professionals could answer more questions on diabetes and maintaining a healthy lifestyle.



## OUTREACH EVENTS

### DDI's Mobile Clinic Visits the AIDaiya Girls School

DDI's Diabetes Mobile Clinic, in collaboration with KFAS's Science Bus, visited the AIDaiya Girls School. A team from the PR, nursing, and diabetes educators were there to answer any diabetes related questions, check blood sugar levels, and share the latest up-to-date information on diabetes to both staff and students.



### DDI Visits Mubarak Abdulaziz Al-Hassawi Polyclinic in Hitteen

DDI's team of healthcare professionals and nursing staff visited Mubarak Abdulaziz Al-Hassawi Polyclinic in Hitteen, South Surra. The team provided blood glucose testing, medical consultations, and physical fitness consultations. The team also provided brochures about diabetes and its complications for the attendees.



## AWARENESS INFORMATION

DDI's Sectors work closely to develop educational materials to share on our social platforms for maximum reach. These informative posts are meant to be educational and cautionary to ultimately improve health outcomes.



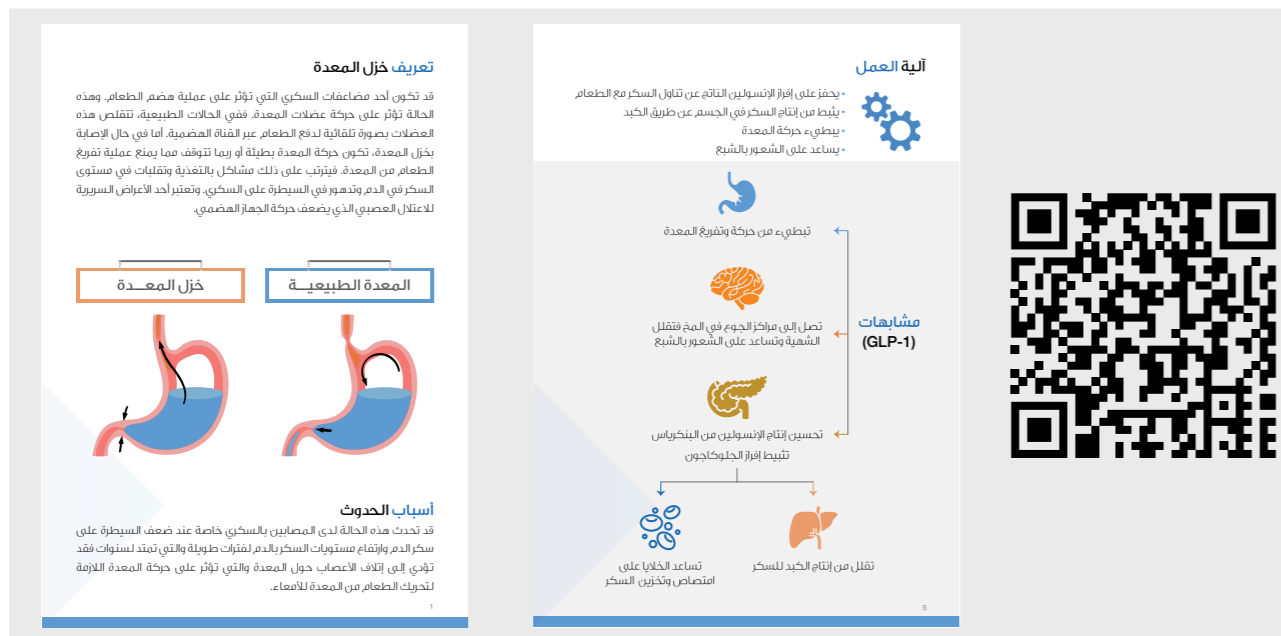
## HEALTH AWARENESS VIDEOS

DDI continuously strives to spread awareness about diabetes, improve people's understanding around specific topics, empower the public to take preventative action, and more. Our health awareness videos include research education, diabetes management and prevention, specialist recommendations, and more.



## EDUCATIONAL RESOURCES

DDI's Departments continuously develop new informative materials that aim to not only complement a patient's treatment plan, but also educate and empower patients to maintain physical and mental wellbeing.



| DDI List of Events 2023   |  |  |                   |
|---------------------------|--|--|-------------------|
| Month                     | Type of Event                            | Title  | Recurrence/ Month |
| January                   | Diabetes Education Program               | SMART Program  | 2                 |
|                           | Patient Education Program                | Kick-Off   | 2                 |
|                           | Diabetes Education; School Visit         | Alresala Bilingual School Visits DDI   | 1                 |
|                           | Public Awareness; Mobile Clinic Outreach | Dasman Bilingual School  | 1                 |
|                           | Workshop                                 | Scientific Writing & Clinical Methodology Workshop   | 2                 |
|                           | Scientific Lecture                       | Professor Carel Le Roux presents a Special Obesity Lecture Titled: What will we learn from the SURMOUNT program with Tirzepatide?                      | 1                 |
| February                  | Diabetes Education Program               | SMART Program  | 2                 |
|                           | Public Awareness; Mobile Clinic Outreach | British Embassy (Mobile Clinic)  | 1                 |
|                           | Public Awareness                         | General Secretariat of the Supreme Council for Planning and Development  | 1                 |
|                           | Public Awareness; Mobile Clinic Outreach | Universal American School (Mobile Clinic)  | 1                 |
|                           | Scientific Lecture                       | Dr. Nabil G Seidah presents a Lecture Titled: The implications of the proprotein convertases PCSK9 and PCSK7 in Lipid Metabolism and Cancer Metastasis | 1                 |
|                           | Public Awareness; Mobile Clinic Outreach | Souq Sharq (Mobile Clinic)   | 1                 |
| March                     | School Visit to DDI                      | International British School (IBS)   | 2                 |
|                           | Patient Education Program                | Kick-Off   | 1                 |
|                           | Public Awareness Outreach                | Kuwait University Event 'Bringing Sciences Together'   | 1                 |
| Public Awareness Outreach | Kuwait Down Syndrome Society             | 1  |                   |

HCPS
T1DM PATIENTS
T2DM PATIENTS
RESEARCHERS/ SCIENTISTS

| DDI List of Events 2023        |  |  |                   |
|--------------------------------|--|--|-------------------|
| Month                          | Type of Event                              | Title  | Recurrence/ Month |
| March                          | Event                                      | World Obesity Day Conference                         | 1                 |
|                                | Diabetes Education Workshop                | Diabetic Retinopathy                                 | 1                 |
|                                | Patient Education Workshop                 | DAFNE Ramadan Workshop                               | 1                 |
|                                | Public Awareness Mobile Clinic Outreach    | Al-Rawda Secondary School for Girls (Mobile Clinic)  | 1                 |
|                                | Patient Education Workshop                 | Fasting Ramadan & Diabetes                           | 1                 |
|                                | Patient Education Workshop                 | Diabetes & Ramadan (Pediatrics)                      | 1                 |
|                                | Patient Education Workshop                 | Diabetes & Ramadan (Adults)                          | 1                 |
|                                | School Outreach                            | American International School (AIS)                  | 1                 |
|                                | Diabetes Education; School Visit           | International British School (IBS)                   | 3                 |
|                                | Diabetes Education; School Visit           | Faculty of Public Health - KU students               | 1                 |
| HCP Diabetes Education Program | SMART - Diabetes Education Program         | 1  |                   |
| April                          | HCP Diabetes Education Program             | SMART - Diabetes Education Program                   | 1                 |
|                                | Public Awareness; School Outreach          | Child Evaluation and Teaching Center                 | 1                 |
|                                | Public Awareness; Mobile Clinic Outreach   | Sabah Al Ahmad Center for Giftedness and Creativity  | 1                 |
|                                | Mobile Clinic, Diabetes Awareness Outreach | The Scientific Center                                | 1                 |
|                                | T1DM Patient Education Workshop            | Dasman Juniors                                       | 1                 |
| May                            | HCP Diabetes Education Workshop            | Pharmacotherapy Management of Diabetes Complications | 1                 |
|                                | T1DM Patient Education Workshop            | Dasman Juniors                                       | 1                 |
|                                | HCP Diabetes Education Program             | SMART - Diabetes Education Program                   | 1                 |
|                                | Medical Education Lecture                  | Basic Foot Care                                      | 1                 |
|                                | Diabetes Education, School Visit           | Jabriya High School for Girls                        | 1                 |

HCPS
  T1DM PATIENTS
  T2DM PATIENTS
  RESEARCHERS/ SCIENTISTS

| DDI List of Events 2023 |  |   |                   |
|-------------------------|--|---|-------------------|
| Month                   | Type of Event                              | Title   | Recurrence/ Month |
| May                     | Symposium                                  | Second Kuwait-Dutch Obstructive Sleep Apnea Symposium   | 1                 |
|                         | Mobile Clinic, Diabetes Awareness Outreach | Canadian Embassy  | 1                 |
|                         | HCP Diabetes Education Course              | Prevention and Management of Diabetic Foot Complications  | 1                 |
|                         | Scientific Lecture                         | Professor Mark Daniel presents a Scientific Seminar Titled: Towards an Ecological Perspective on Cardiometabolic Disease: From Clinic to Population, and Back | 1                 |
|                         | T1DM Patient Education Program             | Kick-Off  | 1                 |
|                         | HCP Diabetes Education Program             | SMART - Diabetes Education Program  | 1                 |
|                         | Mobile Clinic, Diabetes Awareness Outreach | Martyrs' Bureau Kuwait (Mobile Clinic)  | 1                 |
| June                    | HCP Education Workshop                     | Diabetic Retinopathy  | 1                 |
|                         | T2DM Education Workshop                    | Diabetes Journey  | 1                 |
|                         | T2DM Education Workshop                    | Managing Diabetes During Hajj   | 1                 |
|                         | T1DM Education Program                     | WICKED  | 2                 |
| July                    | Training Course                            | SAAD Academy  |                   |
|                         | HCP Diabetes Education Program             | What School Personnel Should Know   | 3                 |
|                         | T2DM Education Workshop                    | Diabetes Journey  | 2                 |
|                         | Workshop                                   | DAFNE   | 1                 |
|                         | Diabetes Awareness School Visit            | Emirati "Rubu' Qarn Foundation for Creating Leaders   | 1                 |
| T1DM Education Program  | WICKED                                     | 1   |                   |

HCPS
  T1DM PATIENTS
  T2DM PATIENTS
  RESEARCHERS/ SCIENTISTS

| DDI List of Events 2023 |   |  |                   |
|-------------------------|---|--|-------------------|
| Month                   | Type of Event                           | Title  | Recurrence/ Month |
| August                  | T1DM Patient Education Workshop         | Dasman Juniors   | 1                 |
|                         | T1DM Patient Education Workshop         | Kick-Off   | 1                 |
|                         | Workshop                                | Systematic Review and Meta-Analysis Workshop   | 1                 |
|                         | HCP Diabetes Education Program          | What School Personnel Should Know  | 5                 |
|                         | T2DM Education Workshop                 | Diabetes Journey   | 1                 |
| September               | T1DM Patient Education Program          | Kick-Off   | 1                 |
|                         | T1DM Patient Education Program          | WICKED   | 1                 |
|                         | Public Awareness Mobile Clinic Outreach | Mobile Clinic Outreach to Al-Daeya School for Girls  | 1                 |
| October                 | Diabetes Awareness School Visit         | Al-Asmaa Bint Al-Harith Girls High School  | 1                 |
|                         | T2DM Education Workshop                 | Diabetes Journey   | 2                 |
|                         | Seminar                                 | Kuwait and Texas Collaboration: Ground-Breaking Diabetes Update with Professor Ralph DeFronzo                            | 1                 |
|                         | Diabetes Awareness School Visit         | Mulla Sulaiman Alkhunaini School for Boys  | 1                 |
| November                | Diabetes Awareness Outreach             | Outreach Participation in an Educational Awareness Workshop-Directorate of Primary Health Care at the Radisson Blu Hotel | 1                 |
|                         | Public Awareness Mobile Clinic Outreach | Mobile Clinic Outreach to Shamiya School for Girls   | 1                 |
|                         | Diabetes Awareness School Visit         | International British School (IBS)   | 1                 |
|                         | Public Awareness School Outreach        | Abdullah Hassan Aljarallah School for Boys   | 1                 |

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| DDI List of Events 2023                 |  |   |                   |
|---|--|---|-------------------|
| Month                                   | Type of Event                            | Title   | Recurrence/ Month |
| November                                | Public Awareness Mobile Clinic Outreach  | Ishbilya Girls Primary School for Girls   | 1                 |
|   | Diabetes Awareness School Visit          | International British School (IBS)  | 1                 |
|   | Diabetes Awareness Outreach              | Mubarak Abdulaziz AlHasawi Polyclinic   | 1                 |
|   | Event                                    | World Diabetes Day  | 1                 |
|   | Diabetes Awareness School Visit          | PAAET Student Visit   | 1                 |
|   | Public Awareness Mobile Clinic Outreach  | Dasma Primary School for Girls  | 1                 |
|   | Diabetes Awareness Outreach              | National Center for Educational Development   | 1                 |
|   | Scientific Lecture                       | Professor Nima Heidari presents a lecture titled: Surgical Treatment of the Diabetic Foot | 1                 |
|   | Public Awareness Mobile Clinic Outreach  | Meshrif Secondary School for Girls  | 1                 |
|   | Diabetes Awareness School Visit          | Jabriya Highschool for Girls  | 1                 |
| November                                | Outreach                                 | Mezzan Holding Company  | 1                 |
|   | Public Awareness Mobile Clinic Outreach  | Saada Bint Auf School for Girls   | 1                 |
|   | Diabetes Awareness Outreach              | Diabetes Coexistence and Prevention' Event at KU  | 1                 |
|   | Diabetes Awareness Outreach              | General Secretariat - Council of Ministers  | 1                 |
|   | T1DM Education Program                   | Kick-Off  | 1                 |
|   | Public Awareness School Outreach         | Khazna Bouresli Primary School  | 1                 |
| Public Awareness Mobile Clinic Outreach | Sahlah Bint Saad Middle School for Girls | 1   |                   |

HCPS
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  T2DM PATIENTS
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### DDI List of Events 2023

| Month    | Type of Event                   | Title  | Recurrence/ Month |
|----------|---------------------------------|--|-------------------|
| December | Diabetes Nutrition Workshop     | Your Health in Your Food' Cooking Workshop   | 1                 |
|          | Diabetes Training               | PAAET Nursing students Training  | 1                 |
|          | Scientific Lecture              | Dr. Anfal Al-Mass presents a lecture titled: Glycerol-3-Phosphate Phosphatase: Its Role in Intermediary Metabolism and a Target for Metabolic Diseases | 1                 |
|          | HCP Education Workshop          | Diabetic Retinopathy   | 1                 |
|          | Diabetes Awareness School Visit | PAAET Student Visit  | 1                 |
|          | Diabetes Awareness Visit        | KDIPA Visit to DDI   | 1                 |
|          | Workshop                        | Diabetes Journey   | 1                 |
|          | Diabetes Nutrition Training     | MoH Dietitians Training Course   | 1                 |



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### ABBREVIATIONS

|                |   |
|----------------|---|
| <b>AACE</b>    | American Association of Clinical Endocrinology              |
| <b>ABPI</b>    | Ankle-Brachial Pressure Index                               |
| <b>ADA</b>     | American Diabetes Association                               |
| <b>ADCES</b>   | Association of Diabetes Care and Education Specialists      |
| <b>AHA</b>     | American Heart Association                                  |
| <b>AHIMA</b>   | American Health Information Management Association          |
| <b>ANGPTL8</b> | Angiotensin-like 8  |
| <b>ATTD</b>    | Advanced Technologies and Treatment for Diabetes            |
| <b>BSS</b>     | Basic Surgical Skills                                       |
| <b>CAP</b>     | College of American Pathologists                            |
| <b>CAV1</b>    | Caveolin-1  |
| <b>CLIA</b>    | Clinical Laboratory Improvement Amendments                  |
| <b>CME</b>     | Continuing Medical Education                                |
| <b>CSC</b>     | Clinical Skills Center                                      |
| <b>DAFNE</b>   | Dose Adjustment for Normal Eating                           |
| <b>DIC</b>     | Diagnostic Imaging Center                                   |
| <b>DKA</b>     | Diabetic Ketoacidosis                                       |
| <b>DUK</b>     | DAFNE UK  |
| <b>ERM</b>     | Enterprise Risk Management                                  |
| <b>EU</b>      | European Union  |
| <b>FDA</b>     | Food and Drug Administration                                |
| <b>Ghitm</b>   | Growth Hormone Inducible Transmembrane Protein              |
| <b>GIANT</b>   | Genetic Investigation of Anthropometric Traits              |
| <b>GLGC</b>    | Global Lipids Genetics                                      |
| <b>HbA1c</b>   | Hemoglobin A1c  |
| <b>HCPs</b>    | Healthcare Professionals                                    |
| <b>IDF</b>     | International Diabetes Federation                           |
| <b>IF</b>      | Impact factor   |
| <b>IRF3</b>    | Interferon Regulatory Factor 3                              |
| <b>IRF5</b>    | Interferon Regulatory Factor 5                              |
| <b>ISAB</b>    | International Scientific Advisory Board                     |
| <b>ISPAD</b>   | International Society for Pediatric and Adolescent Diabetes |

## ABBREVIATIONS

|                    |   |
|--------------------|---|
| <b>KICK-OFF</b>    | Kids in Control of Food   |
| <b>KIMS</b>        | Kuwait Institute for Medical Specialization                                   |
| <b>KU</b>          | Kuwait University   |
| <b>MetS</b>        | Metabolic Syndrome  |
| <b>MENA</b>        | Middle East and North Africa  |
| <b>MoH</b>         | Ministry of Health  |
| <b>NCD-RisC</b>    | NCD Risk Factor Collaboration   |
| <b>OSHA</b>        | Occupational Safety and Health Administration                                 |
| <b>PAAET</b>       | Public Authority for Applied Education and Training                           |
| <b>PAFN</b>        | Public Authority for Food and Nutrition                                       |
| <b>PFAC</b>        | Patient and Family Advisory Council   |
| <b>PORTAL</b>      | Public Office for Research Translation and Liaison                            |
| <b>Q1/Q2/Q3/Q4</b> | Quartile 1/2/3/4  |
| <b>QPS</b>         | Quality and Patient Safety  |
| <b>QSMC</b>        | Quality Safety Management Committee   |
| <b>SMART</b>       | Specific, Measurable, Achievable, Relevant, and Time-bound                    |
| <b>T1DM</b>        | Type 1 Diabetes Mellitus  |
| <b>T2DM</b>        | Type 2 Diabetes Mellitus  |
| <b>VPT</b>         | Vibration Perception Threshold  |
| <b>WHO</b>         | World Health Organization   |
| <b>WICKED</b>      | Working with Insulin, Carbohydrates, Ketones, and Exercise to manage Diabetes |
| <b>WSPSK</b>       | What School Personnel Should Know   |